Symposium OPEN IVR
System Administration Guide

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Contents

About this guide **xiii**
Purpose of this guide xiii
Audience and prerequisites xiii
Document organization xiv
Conventions used in this guide xiv
OPEN IVR 4.0 documentation xvi

1 Overview **1-1**
Accessing AP software 1-2
System Console 1-2
Symposium OPEN IVR Control Panel 1-3
Administration tools 1-3
Information Database Editor 1-5
Report tools 1-5
Application tools 1-6
Prompt Management tools 1-7
SmartHelp 1-8
Using the pull-down menus 1-9
Graphical user environment 1-10
Using the mouse in the Application Editor 1-10
Buttons, sliders, and entry boxes 1-11
Navigating with the keyboard 1-13
Safety features on potentially critical functions 1-14
Additional graphical user interface features 1-15
Screen lock 1-15
Exiting from the Symposium OPEN IVR Control Panel 1-17
Restoring the Control Panel 1-18
AP software auto-restart feature 1-19
Stopping, restarting, and resetting OPEN IVR 1-19

2 System configuration 2-1

Overview 2-1
Before you begin 2-1
Configuring the system for the first time 2-2
Prompt and message numbers 2-3
Choosing prompt and message numbers 2-3
Accessing System Configuration 2-8
Accessing System Configuration from the Control Panel 2-8
Accessing System Configuration from the system shell 2-9
System Configuration Management Node Configuration screen . . . 2-10
Configuring a node 2-13
Programming the AP to recognize each MRS in the node 2-15
AP control types 2-15
MRS Configuration screen 2-16
Configuring the MRS 2-19
Configuring trunks 2-21
Selecting hardware 2-21
Selecting the trunk initialization type 2-22
Phases in the call sequence 2-23
Trunk initialization types in the call sequence 2-24
Trunk Configuration screen 2-34
Configuring trunks 2-35
Applying changes to the system configuration 2-38
Resetting OPEN IVR 2-38

3 Managing applications 3-1

Developing, testing, and modifying applications on a live system . . . 3-1
Managing applications checklist 3-6
Accessing Application Management tools 3-7
Choosing trunk and channel numbers 3-9
Choosing and using directories 3-10
Creating a directory 3-10
Copying a file 3-11
Loading an application 3-11
Assigning channels to an application 3-14
Starting an application 3-16
Changing applications on a set of channels 3-18

Creating, editing, and running scripts 3-20
Creating a script 3-21
Editing a script 3-24
Running a script 3-26
Creating a reboot.sai script 3-27
Stopping an application 3-28
Unloading an application 3-31
Exiting from Application Management 3-32
Exiting from the OPEN IVR Control Panel 3-32
Maintaining security 3-33
Logging out 3-33

4 Managing prompts on the MRS 4-1

Playing existing prompts for review 4-2
Recording and loading new prompts onto the MRS 4-2
Deleting prompts from the MRS 4-3
*B*acking up and restoring prompts 4-3
Choosing prompt numbers 4-4
Standard prompts 4-5
Application-specific prompts 4-6
Choosing a recording method 4-6
Three recording options 4-8
Selecting a trunk 4-11
Checking trunk configuration 4-11
Rules for selecting a trunk on an MRS 4-13
Sound equipment overview 4-13
Practise recordings 4-13
Installing sound equipment 4-15
Prompt Loading Facility screen 4-16
Accessing the Prompt Loading Facility (PLF) 4-17
Select PLF Channel screen 4-19
Selecting a channel 4-20
Playing prompts 4-22
Listening to existing prompts 4-23
Recording temporary prompts 4-25
Recording individual prompts onto the MRS 4-27
Recording individual prompts from tape 4-28
Recording prompts onto the MRS 4-30
Record a list of prompts screen 4-30
Recording a list of prompts onto the MRS 4-32
Recording a list of prompts on tape 4-35

Recording DTMF prompts onto the MRS. 4-39
Record Prompts with DTMF Separators screen 4-40
Recording DTMF prompts onto the MRS. 4-41
Recording DTMF prompts on tape. 4-44
Reviewing and installing temporary prompts 4-49
Deleting prompts 4-53
Backing up and restoring prompts 4-55
Backing up prompts to the AP from the MRS 4-56
Back up a list of prompts screen 4-56
Backing up prompts to the AP from the MRS 4-57
Restoring prompts from the AP to the MRS. 4-58
Restore a List of Prompts screen. 4-59
Restoring prompts 4-60
Exiting from the Prompt Loading Facility 4-61

5 Editing prompts with the System Prompt Manager 5-1

Prerequisites for using the System Prompt Manager 5-2
Accessing the System Prompt Manager 5-3
System Prompt Manager pull-down menus 5-4
Selecting a prompt for editing. 5-5
Using the mouse to edit voice waveforms 5-11
Editing a prompt 5-12
Cutting and pasting the prompt 5-13
Cutting and pasting from one prompt to another prompt 5-15
Using batch mode 5-16
Examples of using the batch process operations 5-18
Using batch mode for a group of VSNs 5-21

6 Creating reports 6-1

Gathering call statistics from your application 6-1
Call Audit Enabled parameter 6-3
EVENT cell. 6-4
Organizing statistics into reports 6-5
Running a report. 6-6
Report sources. 6-6
Creating reports 6-6
Resetting statistics 6-12
Exporting statistics data 6-13
Resizing statistics 6-13
Backing up your statistical information. 6-14
Creating a customized report 6-14

7 Monitoring the system 7-1

Accessing the System Monitor 7-1
Showing port status 7-6
Using the System Application Monitor 7-8
Invoking the System Application Monitor (SAM) 7-10
Exiting the System Application Monitor (SAM) 7-13
Printing the SAM log 7-13
AP software severity file 7-14
Overview 7-14
Modifying severity classes 7-16
Modifying individual error messages 7-17

8 Using SNMP with OPEN IVR 8-1

Introduction 8-1
For more information on SNMP 8-1
Installing SNMP 8-1
Configuring SNMP on the AP or MRS/AP 8-2
Configuring the reporting of AP software event to a management platform 8-3
Configuring the management platform 8-4
Configuring SNMP on the MRS 8-5
Management Information Base 8-7
Nortel Object Request Broker variables 8-7
AP software variables 8-9
MRS software variables 8-12

9 Tools 9-1

Overview 9-1
admingen 9-1
audit 9-2
bup 9-2
chdisp 9-3
circ 9-3
cnvrt 9-4
devnt 9-5
dmsgd 9-6
dsysf 9-6
dtrkf 9-6
/etc/gen 9-6
exp 9-7

genshut 9-7
greset 9-7
killall.sh 9-8
mvpmt 9-8
mvsnf 9-8
nedit 9-9
ralrm 9-9
rstat 9-9
sched 9-9
sconfig 9-10
shvsn 9-10
statsbkup 9-11
version 9-11
vip_audit 9-11
vsn 9-12
xbup 9-12
Internal system tools 9-13
License client and server tools 9-14
lmdiag 9-14
lmstat 9-15
Using the audit tool 9-17
Using the sched tool 9-19
Scheduling applications 9-19
Unscheduling events 9-21
Listing previously scheduled events 9-22
Examples using the sched tool 9-24
Using the backup tool 9-25
Backup Tool file selection window 9-26
Backing up files 9-28
Restoring files 9-32
System Administrator Script Executor (sase) 9-34
Synchronizing VSN data files 9-35
Using the export tool 9-36
Resizing statistics files 9-40

Appendix A: Standard prompts A-1

Appendix B: Software license manager B-1

Licensing scheme. B-1
License check failure B-3
AP software components and behavior B-4
License server node and client node tools B-7
License server node tools B-7
Changing the host name of the license server B-13

Glossary Glossary-1

Index Index-1

About this guide

Purpose of this guide

The *Symposium OPEN IVR System Administration Guide* is prepared for system administrators who use AP software to run applications and manage a Nortel Multimedia Resource Server (MRS) and an Application Processor (AP).

As the system administrator, you can perform a variety of tasks, such as the following:

- Configure your OPEN IVR system, including setting up trunks and prompt ranges.
- Manage applications, including assigning channels to and running applications.
- Use the System Prompt Manager to manage prompts.
- Use the Prompt Loading Facility to record, play, install, and delete prompts.
- Generate reports.
- Use the System Monitor to monitor the functionality of your system.
- Set up Simple Network Management Protocol (SNMP) to monitor and control your network.
- Use administration tools to manage and maintain your IVR system.

Audience and prerequisites

This guide is directed at system administrators who are familiar with IVR systems and the administration tasks performed in this guide. A basic knowledge of UNIX is also helpful.

Document organization

The information in this guide is organized as follows:

- **Chapter 1, "Overview,"** provides a brief overview of the OPEN IVR system interface, including descriptions of the interfaces available from the Control Panel.
- **Chapter 2, "System configuration,"** presents the information necessary to set up your OPEN IVR system, including configuring nodes, the MRSs in the node, and the trunks in each MRS before you can start OPEN IVR AP software.
- **Chapter 3, "Managing applications,"** explains how to load and unload applications, assign trunks, and use scripts.
- **Chapter 4, "Managing prompts on the MRS,"** presents the procedures used to record, review, delete, rerecord, and back up or restore prompts.
- **Chapter 5, "Editing prompts with the System Prompt Manager,"** details how to use the graphical System Prompt Editor to edit prompts that you recorded following the procedures in Chapter 4.
- **Chapter 6, "Creating reports,"** describes the available reports that provide information about how your system is running and how your applications are performing.
- **Chapter 7, "Monitoring the system,"** explains how to view or monitor your voice system and application server configuration activity.
- **Chapter 8, "Using SNMP with OPEN IVR,"** provides an overview of the Simple Network Management Protocol (SNMP).
- **Chapter 9, "Tools,"** describes the tools available on AP software.
- **Appendix A, "Standard prompts,"** provides a list of the recorded standard system prompts included with AP software.
- **Appendix B, "Software license manager,"** provides information on the software license manager.

Conventions used in this guide

Throughout this guide, several typographic conventions have been used to highlight certain types of information:

- Items that appear on the Symposium OPEN IVR screens are identified in quotes, for example:

  the “Timeout” part of the parameters window

- Prompts, file and menu names, directories, accounts, and options are shown in a different typeface, for example:

  `/sci>`

  `sci/install` menu

  `/u/nortel/3270/getbalance.act` file

- Symposium OPEN IVR buffer names are shown in all uppercase characters, for example:

  the CURRENT MESSAGE buffer

- Field names are shown in italics, for example:

  the *Device* field

- Items you must type are shown in bold in a different typeface, for example:

  type **`tn5250`** at the prompt

- Variables shown in command lines appear in italics, for example:

  the `host_cfg`*n* file, where *n* is a variable representing a board number

- Key names you press are shown in angled brackets, for example:

  the <F1> key

- Keyboards usually have keys named <Return> or <Enter> that perform the same function. For convenience, this guide uses the key name <Enter> to represent both key names.

OPEN IVR 4.0 documentation

The following additional information about Symposium OPEN IVR 4.0 is available on the documentation CD-ROM.

Document	NT number/ A0 number/
Symposium OPEN IVR 4.0 Getting Started Guide	NTVE8201 A0732100
Symposium OPEN IVR 4.0 Product Guide	NTVE8202 A0732101
Symposium OPEN IVR 4.0 Application Development Guide	NTVE8209 A0732108
Symposium OPEN IVR 4.0 Cell Catalog	NTVE8208 A0732107
Symposium OPEN IVR 4.0 Installation, Upgrade, and Maintenance Guide	NTVE8204 A0732103
Symposium OPEN IVR 4.0 Planning and Engineering Guide	NTVE8205 A0732104
Symposium OPEN IVR 4.0 Error Messages Guide	NTVE8206 A0732105
Symposium OPEN IVR 4.0 Web Option Guide	NTVE8210 A0732109
Symposium OPEN IVR 4.0 SQL Server User Guide	NTVE8216 A0732115
Symposium OPEN IVR 4.0 Service Console Interface Reference Manual	NTVE8207 A0732106
Symposium OPEN IVR 4.0 VT100 Host Connectivity Configuration and Development Guide	NTVE8221 A0732120
Symposium OPEN IVR 4.0 Text-to-Speech Option Guide	NTVE8213 A0732112
Symposium OPEN IVR 4.0 Speech Recognition Option Guide	NTVE8212 A0732111

Symposium OPEN IVR 4.0 Fax Option Guide	NTVE8211 A0732110
Symposium OPEN IVR 4.0 CAS and ISDN Signaling Option Guide	NTVE8214 A0732113
Symposium OPEN IVR 4.0 Integration Package for Meridian Link User Guide	NTVE8215 A0732114
Symposium OPEN IVR 4.0 Prompt Import Utility Guide	NTVE8218 A0732117
Symposium OPEN IVR 4.0 SNA Host Communications Guide	NTVE8227 A0732774

Chapter 1: Overview

This chapter gives an overview of OPEN IVR AP software tools that you will use for performing system administration tasks. You access AP software's different tools through the Symposium OPEN IVR Control Panel shown in Figure 1-2.

With the Symposium OPEN IVR Control Panel you can access the following:

- Administration tools
- Information Database Editor
- Report tools
- Application tools, including Application Editor and Customizable User Cell Builder
- Prompt Management tools
- SmartHelp

AP software also contains the following key features:

- graphical development tools
- integrated host communications support
- speech-recognition support
- integrated database management
- multilingual application support
- integrated facsimile support
- Graphical Prompt Editor
- Text-to-Speech

Accessing AP software

To log in to your system, follow this step.

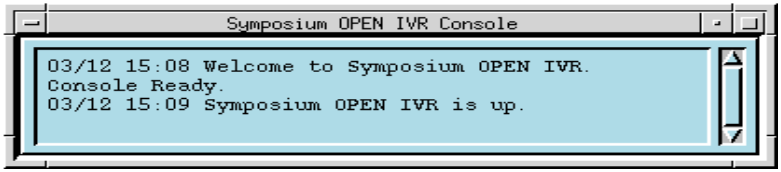
1 When the system is finished booting, at the SCO Login window, log in as **nortel**.

Upon logging in, OPEN IVR starts automatically as a background process. The System Console and the Symposium OPEN IVR Control Panel come up automatically.

System Console

The System Console provides user information and error messages related to AP software activity. The information that is displayed in the System Console allows you to debug simple system problems and keep track of AP software's overall performance. Figure 1-1 shows the System Console.

Figure 1-1: System Console



The System Console can hold up to 40 kbytes of messages in a scrollable buffer. When the console messages exceed 40 kbytes, the console removes the earliest messages 4 kbytes at a time in order to make room for additional messages. To create a permanent record of selected console messages, you can use the mouse to cut or copy them from the screen and paste them into a file.

> ***Note:*** In order to display error messages on the console, use the `admingen` tool to stop, and then start the AP software. The messages appear once the AP software is restarted.

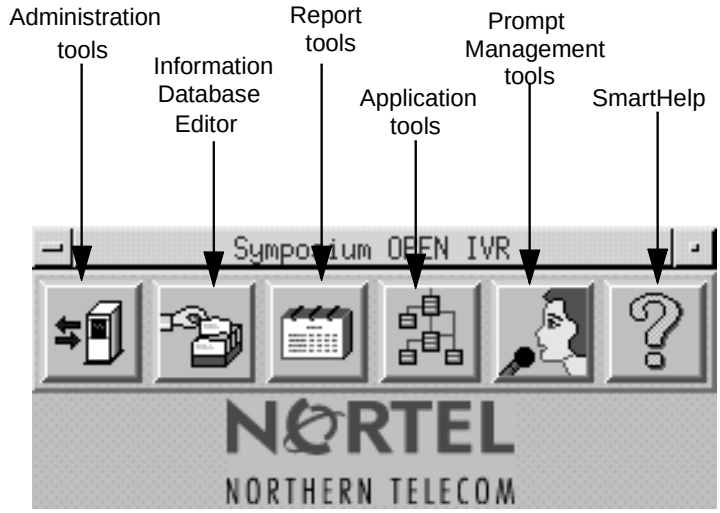
The System Console is always active while you are logged in to the AP software account.

See the Release 4.0 *Symposium OPEN IVR Error Messages Guide* for a complete list and description of the System Console messages.

Symposium OPEN IVR Control Panel

Figure 1-2 shows the Symposium OPEN IVR Control Panel. The buttons available in the Control Panel allow you to access the development and management tools within AP software.

Figure 1-2: Control Panel



Administration tools

Administration tools provides a menu-driven interface that you use to configure and control your OPEN IVR system.

To access the Administration tools, click mouse button 1 (MB1) on the Administration tools Control Panel button.

From the `Administration` menu, you can access the following:

- ***System configuration*** Use this option to configure your system, and each MRS. Your AP software application processor can run more than one MRS.
- ***Network management*** Use this option to configure the network, and the OPEN IVR SNMP Network Management interface.

- ***Application management*** This option is used to do the following:
  - Assign multiple applications to specific ports
  - Assign each application to as many telephone trunks as you choose.
  - Run multiple applications simultaneously, toggle them, or run them independently of each other.

    Note: In multiple MRS configurations, consult your system configuration to determine which channels are configured on each MRS. Messages must be retrieved separately from each MRS in the configuration.

  - Update applications without losing or interrupting any of your calls. When you want to change an application, AP software can make the switch without interrupting your service; however, some naming restrictions apply.
  - Configure MRS ports as inbound or outbound.
- ***System Monitor*** Use this option to bring up the graphical System Monitor to track available disk space and the percentage of port activity on each MRS, and the current status of each channel in real time. For example, you can visually detect which channels are on-hook, off-hook, or unavailable for calls, and you can monitor call progress through an application.
- ***Lock screen*** This option is used to lock your screen to prevent unauthorized access.
- ***Reset*** Symposium OPEN IVR.

Information Database Editor

The Information Database Editor is a menu-driven utility within AP software that creates two types of databases:

- a message database that applications use to collect and store messages from callers
- an information database that AP software uses to store data, in the form of character strings, that can be used as part of the application

The AP software message database is used to collect and store caller's speech messages in a set of mailboxes.

The information database is used to store data (such as names, addresses, and phone numbers of subscribers who use a speech messaging application or customers who use an order entry application). Each information database consists of a series of records that can be connected to applications or used separately. For example, an application might look up a specific record and then copy information from the record into buffers within the application.

To access the Database Editor, click MB1 on the Information Database Editor Control Panel button.

Report tools

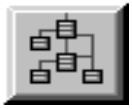
Report tools, available from the Control Panel, allow you to access information about system activity to do the following:

- Find out how many calls have been received by application, cell, day, hour of day, and trunk.
- Track what is happening to the trunks and MRSs controlled by your AP.
- Display and print reports, including a transaction log with error and informational messages from the AP software processes. You can track what calls were processed through the application cells, as well as learn from which trunks the calls came. You can display or print the information you have gathered as reports.

To access the Report tools, click MB1 on the Control Panel Report button.

Note: Report Writer and perl executable files are installed automatically. Use the perl executable files to access Report Writer and any other perl software. Access the standard perl software package at the web site *www.perl.com*.

Application tools



The `Application tools` menu includes the Graphical Application Editor and the customizable User Cell Builder.

The Application Editor enables you to lay out your call flow graphically on a drawing board. When you complete your application, it is an executable file ready to be loaded and run.

You can design applications that control the activity on one or more telephone ports connected to an MRS speech system and perform a variety of activities, such as the following:

- Answer a telephone call.
- Play recordings to callers.
- Have callers enter information by pressing designated DTMF key sequences or through speech recognition.
- Have callers make choices by pressing designated keys and have your application carry out these choices.
- Record and store messages from callers and play back these messages to other people at a later time, on demand.
- Make outgoing phone calls designated by the application.
- Access SQL databases.
- Transfer callers to an operator or another line.
- Send and receive faxes.
- Connect callers with external systems (such as paging terminals).
- Schedule message delivery applications to be run at designated times.
- Access host databases through 3270, 5250, and VT100 interfaces.
- Give input options through either DTMF or speech recognition as well as play prompts in a choice of different languages.
- Run applications in a choice of different languages.

The Customizable User Cell Builder enables you to create and modify customized cells (based on the USER cell). You can then use these cells in the Application Editor. With Cell Builder, you can specify a customized icon that you select from your cell palette and place on the drawing board.

> ***Note:*** You must code the actual functionality for the cell in a separate `usr.c` file. For more information, see Chapter 9, "Tools," which discusses creating User Functions.

To access Application tools, click MB1 on the Application tools icon in the Control Panel. The Cell Builder is also invoked when you access the Application Editor.

For information regarding the directory file structure, refer to Appendix B, "Useful system information," in the *Symposium OPEN IVR Installation, Upgrade and Maintenance Guide*.

Prompt Management tools

Prompt Management tools provides several prompt management utilities. The Prompt Loading Facility (PLF) allows you to record your own prompts, load them into the Multimedia Resource Server (MRS) for distribution, and update existing prompts without disrupting your current service.

You can record your prompts directly onto the MRS in three ways:

- with a telephone
- with a microphone
- through a studio recording tape (for superior sound quality), which is then loaded onto the MRS

If your MRS is connected to an Ethernet network, you can use the PLF to move prompts from the MRS to the AP and distribute them to the other MRSs.

Prompt Management tools also provides access to the graphical System Prompt Editor. This provides a graphical interface in which to edit your prompts.

To access the Prompt Management tools, click MB1 on the Prompt Management tools button from the Control Panel.

> ***Note:*** The Prompt Editor is a licensed feature.

SmartHelp

SmartHelp provides context-sensitive information about the different Control Panel tools available from the button menus.

To access SmartHelp, follow these steps.

1 With MB1, click the SmartHelp button on the Symposium OPEN IVR Control Panel.

The system displays the Symposium OPEN IVR SmartHelp window.

2 Use the mouse to resize the window, and move it to the side of the desktop so you can access the Control Panel.

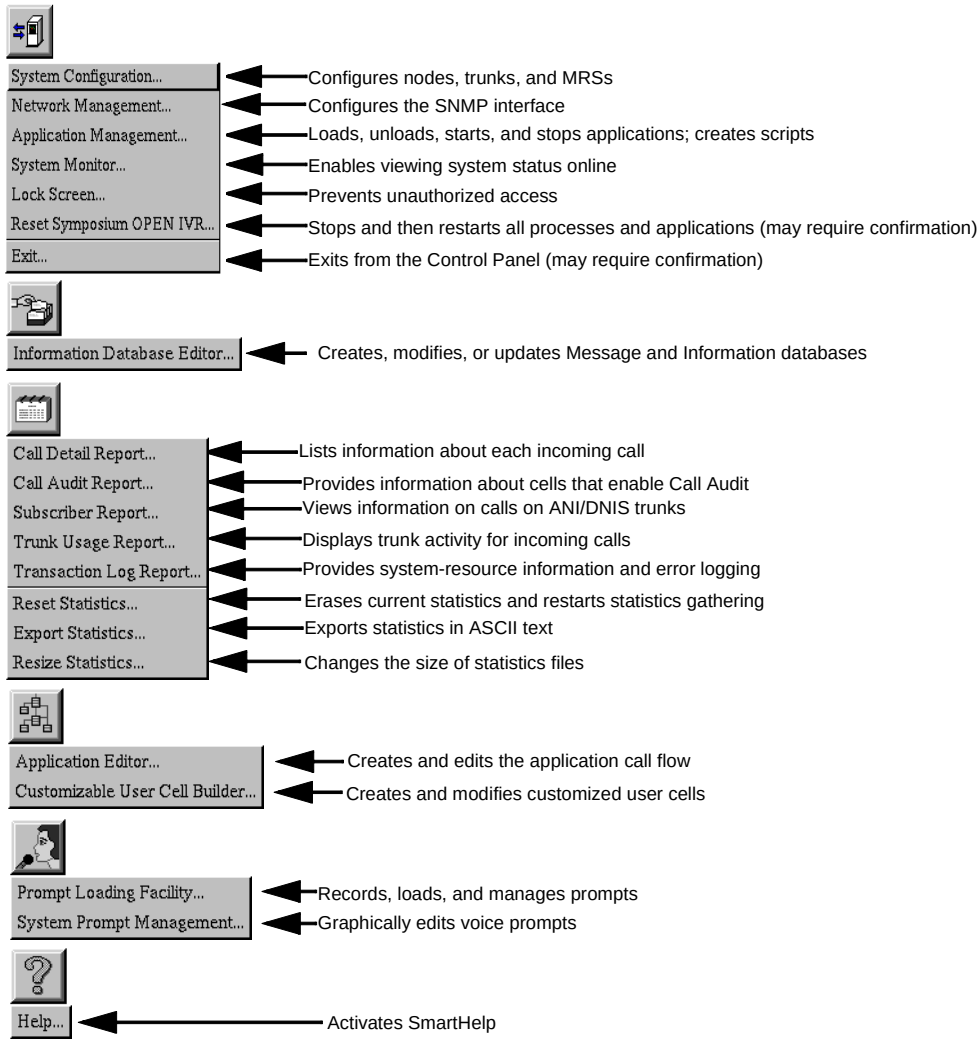
As you click other Control Panel buttons and display the menus, information for the appropriate button is displayed in the SmartHelp window.

3 To close the SmartHelp window, click the" Dismiss" button at the bottom of the SmartHelp window.

Using the pull-down menus

Each of the Control Panel options shown in Figure 1-2 displays a pull-down menu. Figure 1-3 shows the menu options and a brief description of each.

Figure 1-3: Using pull-down menus


System Configuration...
Configures nodes, trunks, and MRSs
Network Management...
Configures the SNMP interface
Application Management...
Loads, unloads, starts, and stops applications; creates scripts
System Monitor...
Enables viewing system status online
Lock Screen...
Prevents unauthorized access
Reset Symposium OPEN IVR...
Stops and then restarts all processes and applications (may require confirmation)
Exit...
Exits from the Control Panel (may require confirmation)
Information Database Editor...
Creates, modifies, or updates Message and Information databases
Call Detail Report...
Lists information about each incoming call
Call Audit Report...
Provides information about cells that enable Call Audit
Subscriber Report...
Views information on calls on ANI/DNIS trunks
Trunk Usage Report...
Displays trunk activity for incoming calls
Transaction Log Report...
Provides system-resource information and error logging
Reset Statistics...
Erases current statistics and restarts statistics gathering
Export Statistics...
Exports statistics in ASCII text
Resize Statistics...
Changes the size of statistics files
Application Editor...
Creates and edits the application call flow
Customizable User Cell Builder...
Creates and modifies customized user cells
Prompt Loading Facility...
Records, loads, and manages prompts
System Prompt Management...
Graphically edits voice prompts
Help...
Activates SmartHelp

Graphical user environment

OPEN IVR takes advantage of your AP's mouse-driven graphical user interface. The documentation assumes that you are familiar with this graphical user interface, the overall operation of your AP, and the SCO UNIX operating system.

Using the mouse in the Application Editor

Your mouse is essential for designing your application. It will serve as a pointer for selecting cells, a pencil for drawing cell interconnections, and scissors and glue for cutting and pasting. Instead of worrying about the mechanics of creating an OPEN IVR application, you can concentrate on the logical design of your application. Table 1-1 lists the Application Editor functions you can perform with a three-button mouse.

Mouse button 1 (MB1) typically selects an object to be manipulated. Mouse button 2 (MB2) performs a subsequent action on the selected object. Mouse button 3 (MB3) allows you access to the SQL cell pop-ups in the Application Editor environment and off-page connector pop-ups. Specific functions are described on the following chart.

Table 1-1: Mouse button functions

Button #	Action	Application Editor function
Button 1 (MB1)	Click	Selects a cell from the cell palette, or button. Deselects a cell when clicked on background of drawing board area.
	Double-click	**On cell:** Opens a parameters window on the selected cell. **Off-page connector icon:** Jumps to the page on which a destination cell resides.
	Drag	Moves a slider. Expands/reduces a window. Marks text in a text entry box.
	Hold	(On scroll bar arrow) Scrolls through a list.

Button #	Action	Application Editor function
Button 2 (MB2)	Click	Places a selected cell on the drawing board, or selects an icon from the cell palette.
	Drag	Moves a selected cell to another location on the drawing board (can be either the same page or another page).
Button 3 (MB3)		SQL pops up in SQL cells. Off-page connector pops up.

Note: You can use a two-button mouse on SCO UNIX systems by pressing both buttons simultaneously to perform the function of the middle button on a three-button mouse.

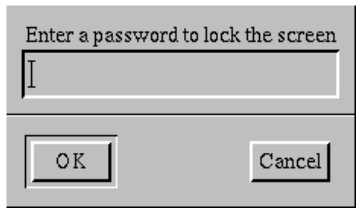
Buttons, sliders, and entry boxes

The OPEN IVR interface allows you to take advantage of your AP's user-friendly graphical environment. The interface provides Control Panels, push buttons, slide controls, and radio buttons that are highlighted when you turn them on.

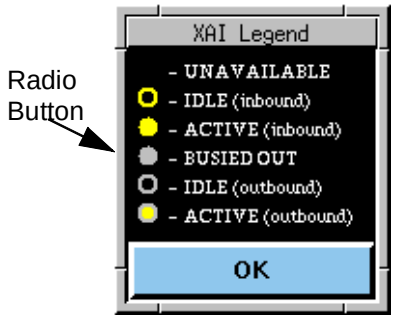
Status windows display messages and current selections, text entry boxes allow you to type in options directly, and list boxes let you browse through choices until you find the one you want. Each Control Panel tool takes advantage of these graphical objects in different ways.

Buttons

A button on a window is used to select a specific action, such as "OK" to verify and implement an action or entry, or "Cancel" to exit the screen without saving any changes. Click MB1 on the selected button to initiate the action.



A radio button represents one of a series of choices. To activate the radio button, click MB1 on your selection. The chosen radio button is highlighted. Click MB1 on the highlighted radio button a second time to deselect this option.



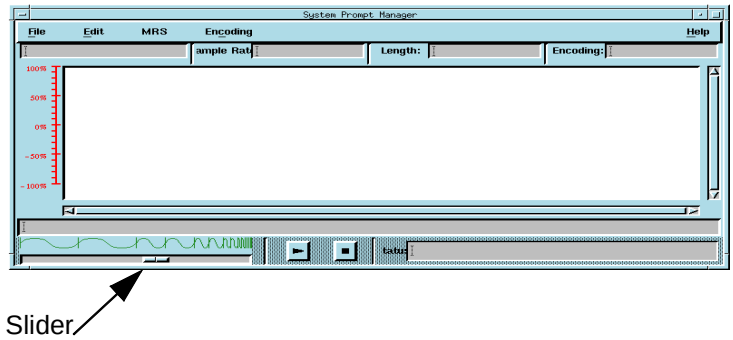
Note: Depending on the window, more than one radio button may be selected at one time.

Slider

The slider is a bar on a window that is moved along a scale to

- reposition the contents of a window, by moving the visible screen to the left or right, up or down
- change the volume or intensity of a sound wave or other value on a graduated scale

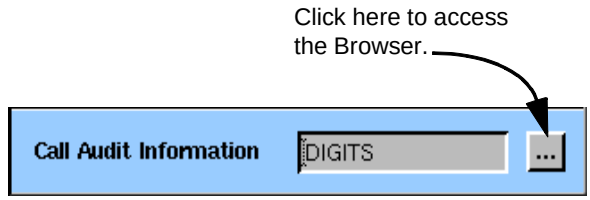
To adjust the window or value, click MB1 on the slider bar and drag the bar to the left or right (or up or down) to the desired position. Release MB1 when the correct position has been reached.



Text entry boxes

A text entry box displays the current value for an object (such as a cell parameter) and is accompanied by an ellipsis push button to access additional valid values from a dialog box called the Browser. For example, the Call Audit Information displayed in Figure 1-4 is currently DIGITS.

Figure 1-4: Text entry box with push button



There are two ways you can select a new value. You can position the pointer in the text entry box using one of the actions listed in Table 1-2 and type a new value, or you can select a value from the Browser.

Table 1-2: Manipulating text entry boxes

Action	Process
Select and type over text.	Point, click and drag MB1; type text.
Position insertion area.	Point and click MB1.
Select and type over nearest word.	Point and double-click MB1; type text.
Replace all text.	Point and triple-click MB1; type text.

Navigating with the keyboard

You have the choice of manipulating a menu option using either the mouse or a key sequence at your keyboard. You may find it easier to access commonly used options directly from the keyboard using a mnemonic or keyboard accelerator.

Cursor keys

You can also use the cursor keys to move through menu options and press <Enter> to select the highlighted option, or press <ESC> to cancel the menu without choosing an option.

Safety features on potentially critical functions

Critical functions are protected through various safety features that force you to confirm that you want to perform the action. For example, if you select the `Exit...` option from the Administration button, you must confirm that this is the action you want to perform, as shown in Figure 1-5 and Figure 1-6.

Figure 1-5: Menu option requiring verification

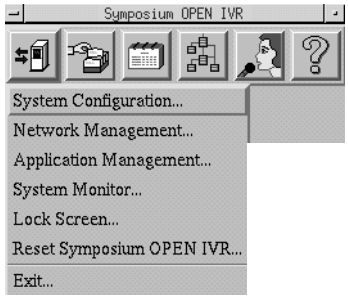
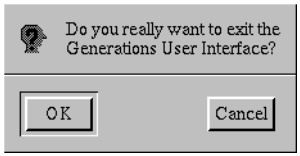


Figure 1-6: Verification pop-up



Additional graphical user interface features

Additional features in the interface allow you to lock your screen as well as stop and restart OPEN IVR.

Screen lock

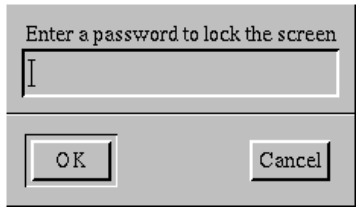
The screen lock feature allows you to lock the screen to prevent anyone from using your terminal while you are not present.

Locking the screen

To lock your screen, follow these steps.

1 Click MB1 on the Administration tools button, and select the `Lock Screen` option.

The following window is displayed:



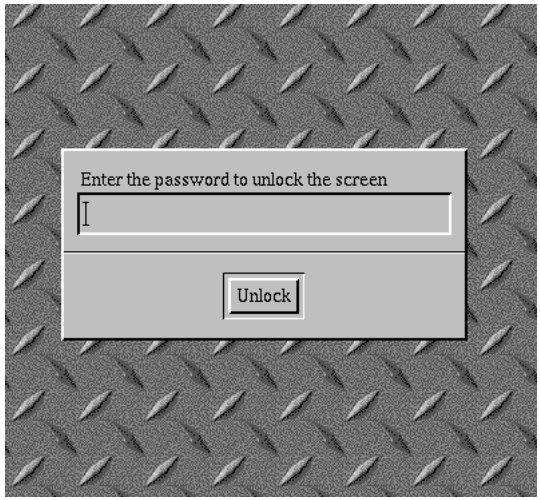
2 Click MB1 on the text entry box, and then type a password.

Note: Only this password will unlock the screen. Select a password that you will easily remember but that an unauthorized user cannot easily guess.

3 Click MB1 on the OK button to lock the screen (or select Cancel to quit without locking the screen).

The system locks the screen and shows a window similar to Figure 1-7.

Figure 1-7: Locked screen



Unlocking the screen

To unlock the screen, follow these steps.

1 Click MB1 on the text entry box, and type the lock screen password.

2 Once you have typed in the password, click MB1 on the Unlock button.

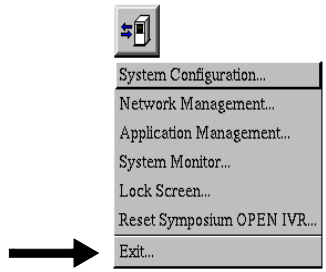
The screen is unlocked, and the desktop is redisplayed.

Exiting from the Symposium OPEN IVR Control Panel

Before exiting the Symposium OPEN IVR Control Panel, you should exit all of the windows that you have opened from the Control Panel.

To exit the Control Panel, follow these steps.

1 Click the Administration tools button, and select `Exit` from the menu.
I



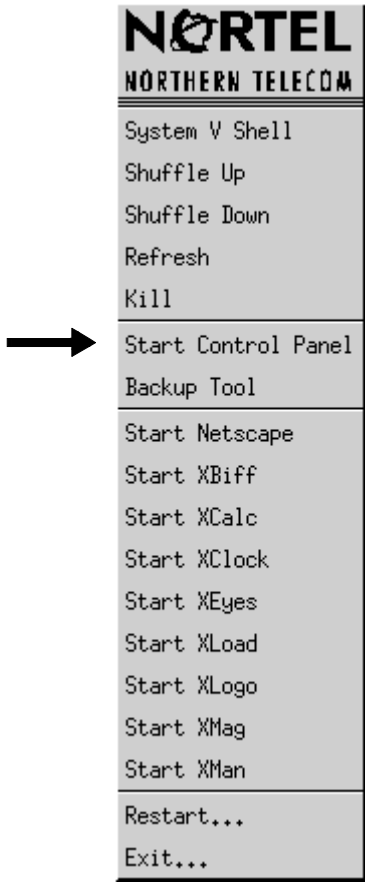
2 Click MB1 on the OK button in the confirmation window.

Restoring the Control Panel

You can restore the Control Panel without logging out by using the background menu.

If you point on an area of the screen where there are no Unix windows and then hold MB1, the root or background menu will be displayed as shown in Figure 1-8. Although this menu is site-specific (and easily modified through SCO UNIX), it should include a `Start Control Panel` option. Select this option to restore the Control Panel.

Figure 1-8: Sample background menu



AP software auto-restart feature

Whenever you boot or reboot your AP, the Administration tool's runtime processes are automatically started in the background. If any of the AP software processes are terminated prematurely, AP software is shut down gracefully and restarted automatically by the auto-restart facility.

During a boot, reboot, or auto-restart procedure, AP software looks in the `exe` subdirectory of the AP software's base directory for a file named `reboot.sai`. The `reboot.sai` file is a script that you can create to automatically load applications, set channels, and start applications when AP software is started. This file is useful for initializing the application environment whenever one of the following events occurs:

- The AP is initially booted.
- The AP is rebooted following a power failure.
- AP software recovers from a software failure.
- OPEN IVR has been reset.

Initially, there is no `reboot.sai` file. You can create this script file using a text editor or the Application Management `Write a Script` option. Refer to Chapter 3, "Managing applications checklist," in this guide.

Once the AP boots, you can log in to the account where AP software is installed. The graphical user interface (GUI) to AP software is automatically started.

Stopping, restarting, and resetting OPEN IVR

If you need to stop, start, or reset OPEN IVR without rebooting the AP, use one of the following procedures.

Preferred method

Log in to the account where AP software is installed and select `Reset Symposium OPEN IVR` from the `Control Panel Administration` menu, or type **`greset`** at the shell prompt.

Alternate method

Log in as `root` and type one of these commands depending on the desired action:

Table 1-3: Start and stop commands

Command	Action
gen start	Starts OPEN IVR.
gen stop	Stops OPEN IVR and verifies that all OPEN IVR system resources are free. Uses the `genshut` tool if necessary.
admingen start	Starts OPEN IVR. Executes the script `/etc/gen.`
admingen stop	Stops OPEN IVR. Executes the script `/etc/gen`.
gen reset	Resets OPEN IVR.
gen shut	Brings OPEN IVR down forcefully and frees all system resources. You should use this tool only in the case of abnormal system behavior.

Chapter 2: System configuration

Overview

This chapter explains how to set up your Interactive Voice Response (IVR) system, as well as how to modify AP configuration settings; for example:

- adding or removing a Multimedia Resource Server (MRS) from the node
- installing or changing a trunk card in the existing trunk configuration
- changing the prompt range
- changing the behavior of a trunk

This chapter provides procedures for configuring MRS information that resides on the AP for your OPEN IVR system.

Before you begin

You must program how the MRS is configured on the AP before you start the AP software. Using the System Configuration interface automatically generates a start-up file that contains a list of all the processes necessary to run AP software. This file contains all the appropriate process names and command-line arguments based on data that you entered into the system configuration fields. The `vsn*.data` file is created.

The `vsn` program uses the system configuration files to determine how to set up the `vsnx.data` file. The `vsn*.data` files contain data that logs which VSNs are allocated on the MRS disk. These files are created only if they do not already exist. If created, the files are updated after the `vsn` program is run. The format of each `vsn` file is as follows:

```
vsn -v -f vsn*.data -n vtk/nodename
```

Configuring the system for the first time

Use the following procedure checklist when configuring your Symposium OPEN IVR system for the first time.

Procedure	Completed
“Choosing prompt and message numbers” on page 2-3	
“Accessing System Configuration” on page 2-8	
“Configuring a node” on page 2-13	
“Programming the AP to recognize each MRS in the node” on page 2-15	
“Configuring trunks” on page 2-21	
“Resetting OPEN IVR” on page 2-38	

Prompt and message numbers

Storage on the MRS/AP, MRS/Tower, and MRS/Rack systems is divided between prompts and messages. Be aware of the differences between them before you choose your own numbers for storage.

- All AP software voice recordings are either prompts or messages. Prompts are voice recordings that lead callers through applications; messages are recordings made by callers.
- A system-wide prompt is available to all channels on all MRSs in the node because a copy of the prompt is stored on each MRS.
- Use of a local prompt is restricted to the MRS on which it is stored. If you know that some of your prompts will be used on only one of your MRSs and not the others, those prompts need not take up storage space on the other MRS. By designating some prompts as local prompts, you can make more effective use of storage space.
- AP software uses prompt numbers and message numbers to label voice recordings. These numbers are always a positive integer.

  Note: The prompt and message numbering scheme in AP software is different from the system the MRS uses for numbering voice recordings. The MRS assigns voice storage numbers (VSNs) to prompts and messages. VSNs are not used when working with AP software.

Choosing prompt and message numbers

To decide how many prompt and message numbers to use when you configure your node, follow these steps.

1 Determine how many voice recordings are available on your MRS.

Note: Each volume on an MRS can store up to 13 824 VSNs; a volume is a separate partition on the disk. For example, if the first disk in your MRS is partitioned with two storage volumes, then disk 1 can store up to 27 648 (13 824 x 2) voice recordings. For detailed information on assigning volumes, refer to the *Symposium OPEN IVR Planning and Engineering Guide.*

Figure 2-1 shows how you can configure your disks using different volume partitions.

Figure 2-1:
Sample disk configurations

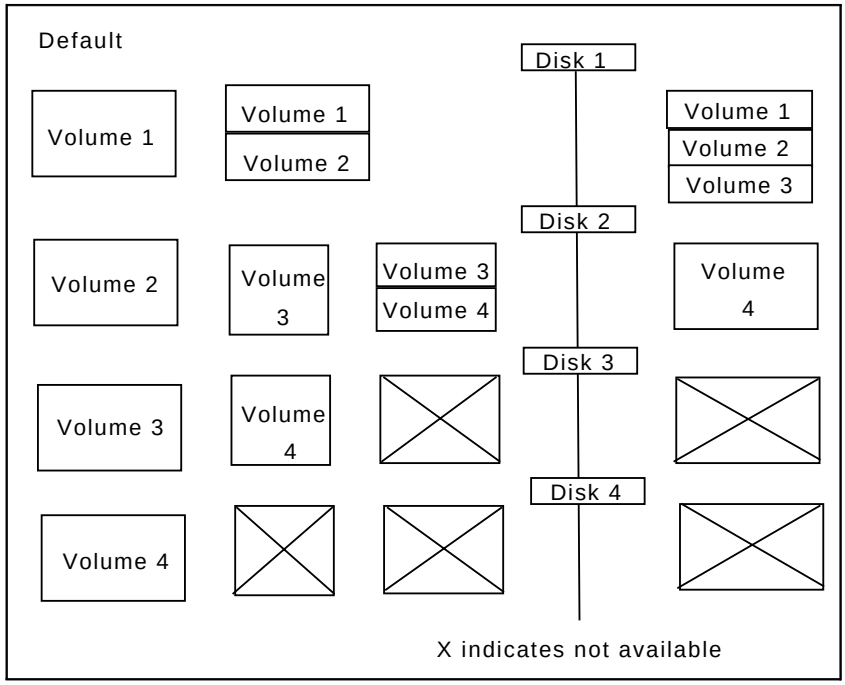


Table 2-1 lists the number of voice recordings available depending on how many disks are configured on your MRS.

Table 2-1: Number of voice recordings available on MRSs

Number of volumes	Number of voice recordings available
1	13 824
2	27 648
3	41 472
4	55 296

2 Decide how many system-wide prompts you want for the node.

System prompts can include the following categories:

- standard system prompts (see Appendix A)
- custom prompts designed by an application developer

  The limit on the number of custom prompts is determined by the availability of storage space and prompt numbers (volumes).

- multilingual system and application prompts

3 Decide how many local prompts you want for each MRS in the node. Reserve some prompt numbers in anticipation of future application prompts or additional languages.

When you record prompts or messages through the Prompt Loading Facility (PLF) for the RECP or RMSG cells, a temporary VSN is assigned. The temporary voice recording is located in the message area. AP software locates the area where the message is recorded by accessing the `vsn`*x*`.data` file (where *x* represents the MRS number). When you exit from the PLF, the temporary recordings are deleted.

CAUTION

Risk of data loss

For temporary VSNs, either when loading VSNs on an MRS with the PLF for the RECP or RMSG cells, or when sending FAX data files, AP software uses unassigned numbers from the message range. Make sure that the total number of prompts necessary does not equal or exceed the total number of voice recordings that can be stored by a single MRS. Reserve space for at least 1000 prompts for recording purposes.

4 Calculate the number of messages that can be stored by the number of volumes your node contains, if you choose.

Note: You are not required to make the calculation, because AP software calculates this information automatically. The maximum number of messages for an MRS is the number of voice recordings minus the number of system-wide and local prompts:

Number of messages = total number of voice recordings – (number of local prompts + number of system-wide prompts)

5 Record the number of system-wide prompts and local prompts you decided to use.

Note: You need these numbers when you follow the procedure in "Configuring a node" later in this chapter.

When multiple languages are used, a number of system prompts are added for each language before the system and local prompts are defined. (Note that the terms "application prompt" and "local prompt" are sometimes used interchangeably; both terms refer to the same type of prompt; however, local prompts are reserved to a specific MRS). The system administrator must allocate 500 prompts for each language, starting with the English language.

Table 2-2 illustrates the ranges of prompt numbers for various language systems. Note that space is reserved for additional languages.

Table 2-2: Language prompts

Language prompts	Range of prompts
English system prompts	0 to 499
French system prompts	500 to 999
Spanish system prompts	1000 to 1499
(Reserved space for additional languages)	1500 to 2499
English applications prompts	2500 to 3499
French applications prompts	3500 to 4499
Spanish applications prompts	4500 to 5499
(Reserved space for additional languages)	5500 to 7499
Messages	7500

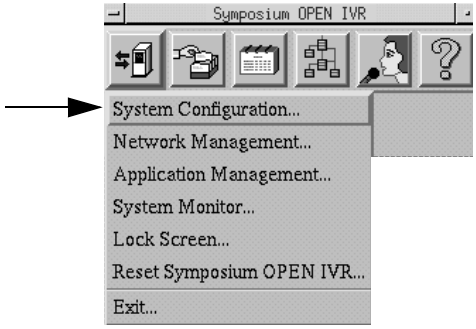
Accessing System Configuration

You can access System Configuration from the Control Panel and from the system shell.

Accessing System Configuration from the Control Panel

To access the System Configuration tools, follow these steps.

1 From the Control Panel, click the Administration tools button and select `System Configuration` from the menu.



2 When the window outline is displayed, click MB1 on the desktop to place the window on the desktop.

The `System Configuration Management Node Configuration` screen is displayed on the desktop.

Accessing System Configuration from the system shell

You can also start System Configuration from the system shell by following these steps.

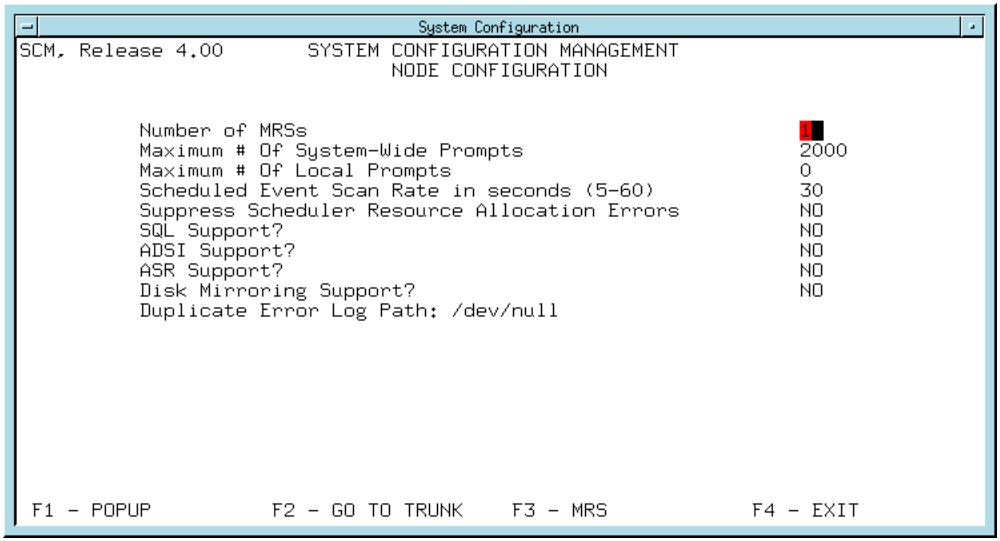
1. In an X-Windows environment, change the current directory to `exe` in the home directory of the AP software.
2. Type the following command at the shell prompt: **`scm_start`**
3. Log in as `root`.

   In a non X-windows environment, you must first change directories.
4. Type **`cd u/nortel/exe`** and press <Enter>.
5. Type **`./scm`** and press <Enter>.

System Configuration Management Node Configuration screen

This section provides information on the fields in the `System Configuration Management Node Configuration` screen, and on how to configure the node.

Figure 2-2: Node Configuration screen


System Configuration
SCM, Release 4.00
SYSTEM CONFIGURATION MANAGEMENT
NODE CONFIGURATION
Number of MRSs 1
Maximum # Of System-Wide Prompts 2000
Maximum # Of Local Prompts 0
Scheduled Event Scan Rate in seconds (5-60) 30
Suppress Scheduler Resource Allocation Errors NO
SQL Support? NO
ADSI Support? NO
ASR Support? NO
Disk Mirroring Support? NO
Duplicate Error Log Path: /dev/null
F1 - POPUP
F2 - GO TO TRUNK
F3 - MRS
F4 - EXIT

The `Node Configuration` screen contains a number of data fields that are used to configure the node. Each data field uses a preset default value, which can be changed, if necessary. Descriptions of these fields follow.

Number of MRSs

A node includes an AP and up to four MRSs. (An MRS/AP is considered a node.) In this field, you report the number of MRSs in the node.

Valid values: 1–32
Default value: 1

Note: The total number of MRSs does not include any Web MRS.

Maximum # Of System-Wide Prompts

Enter the amount of storage you want to set aside for system-wide prompts. (This is the number of system-wide prompts you chose in the procedure “Choosing prompt and message numbers.”)

Valid values: 1–55 296
Default value: 3000

Maximum # Of Local Prompts

This field lets you indicate how much storage per MRS you want to set aside for local prompts. (This is the number of local prompts you chose in the procedure “Choosing prompt and message numbers.”)

Valid values: 0–55 296
Default value: 4000

Scheduled Event Scan Rate in seconds

This field determines how often the application scheduler checks for applications that are ready to be run.

Valid values: 5–60 seconds
Default value: 30

Suppress Scheduler Resource Allocation Errors

The entry in this field specifies whether you want to suppress errors that occur when the scheduler does not have outdial resource available.

Valid values: YES, NO
Default value: NO

SQL Support?

If any of your AP software applications use OPEN IVR SQL cells, then set the value in this field to YES.

Valid values: YES, NO
Default value: NO

ADSI Support?

If any of your AP software applications use OPEN IVR ADSI cells, then set the value in this field to YES.

Valid values: YES, NO
Default value: NO

ASR Support?

If any of your AP software applications are using Speech Recognition, set the value in this field to YES.

Valid values: YES, NO
Default value: NO

Disk Mirroring Support?

This field allows you to set a secondary hard disk to mirror, or shadow, the system activity of the primary hard disk.

Valid values: YES, NO
Default value: NO

Duplicate Error Log Path

This field allows you to designate another transaction path for log messages (that is, a printer or a com port).

You can enter a maximum of 31 characters in this field. In addition, there is no limit on the size of this messages file; therefore, use caution when you designate the transaction path.

Default value: `/dev/null`

Configuring a node

To configure a node, follow these steps.

1 Make any necessary changes to `Node Configuration` screen.

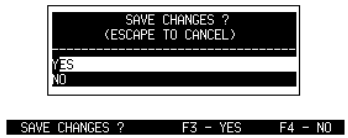
Use the arrow keys, <Tab>, and <Enter> to move the cursor to the field you want to change; then type a new value in the field. If you make a mistake in typing, you can use the <Backspace> key to delete characters.

2 When you complete your entry, press <Enter>, <Tab>, or an arrow key.

AP software accepts the new value. The value is checked to see if it is valid. If the new entry is invalid, a message is displayed on the screen. If the entry is valid, the cursor is advanced to the next field.

3 You can now program the AP to recognize the MRSs (as outlined in “Programming the AP to recognize each MRS in the node” on page 2-15) or, if you are finished making changes, press <F4> (Exit).

The SAVE CHANGES pop-up menu is displayed, as shown below.



4 If you press <F3>, your configuration changes are saved. If you press <F4>, the changes you made in this session are not saved.

Note 1: Alternatively, you can use the arrow keys to move the cursor to highlight YES or NO and then press <Enter>. The `System Configuration` screen closes.

Note 2: Changes take effect once you reset AP software, using the `admingen stop;admingen start` command.

CAUTION

Risk of erasure of stored messages

The values for the "Maximum # Of System-Wide Prompts" parameter and the "Maximum # Of Local Prompts" parameter determine the boundaries for your prompt and message numbers.

After you start using AP software, use caution in changing these boundaries. If you enlarge the storage areas for prompts, you may accidentally erase some stored messages. Nortel recommends that you reserve prompt numbers larger than needed for future language access.

Programming the AP to recognize each MRS in the node

After you configure the system, you must program the AP to recognize each MRS in the node. This section provides the instructions and describes how AP control types affect MRS operation.

AP control types

The following examples illustrate how the MRS interacts with primary and secondary APs:

- If a primary AP attempts to connect to the MRS when no secondary AP is currently connected, MRS software first verifies the setup of the MRS (including ports, licences, and so on), then passes the setup information to the AP which is requesting connection.
- When no secondary AP is currently connected to the MRS, the MRS software sets a timer for approximately 90 seconds and waits for the primary connection.

  If no primary AP attempts connection during this interval, the MRS software switches control to the secondary AP. If the primary AP attempts to connect during this interval, the MRS software gives control to the primary AP.
- If a primary or secondary AP attempts to connect to the MRS while another AP is in control, the MRS software immediately returns a reply indicating that no trunks are available and queues the second AP's request.
- When the controlling AP disconnects from the MRS, behavior varies depending on the following circumstances:
  - If one or more primary AP requests are in the queue, MRS software resets itself and gives control to the primary AP.
  - If one or more secondary AP requests are in the queue and the primary AP is not waiting, MRS software resets itself and the timer is started. This process enables the primary AP to reestablish its connection.
- If there are no AP requests in the queue, then MRS software sets the critical alarm and enters host-failure mode.

- A primary AP does not take control from a secondary AP that is currently connected. Manually reset the MRS to cause MRS software to search for its primary AP.

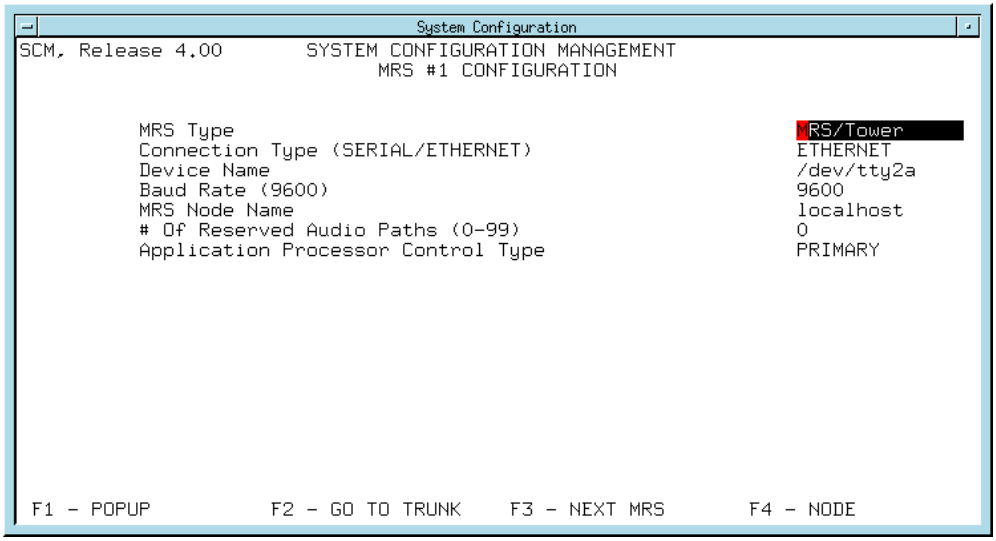
You can reset the MRS using the Service Console Interface (SCI), which allows service to continue on those MRSs that do not require resetting. This procedure is described in the *Symposium OPEN IVR 4.0 Service Console Interface Reference Manual*.

Alternatively, you can restart AP software on the secondary AP and cause the AP to relinquish its control of the MRS. The MRS then establishes control with its primary APs. However, this procedure halts operation of AP software until the restart procedure is completed.

MRS Configuration screen

This section provides information on the fields in the `MRS Configuration` screen and on how to configure the MRS.

Figure 2-3: MRS Configuration screen



The MRS number is displayed at the top of the screen. The screen contains the following fields:

MRS Type

This field identifies the type of MRS. Change this type to correspond to your MRS. If the MRS is a folded system, specify MRS/AP; if the MRS is a Rack, specify MRS/Rack; if the MRS is a Tower, specify MRS/Tower; if it is a Web MRS, specify MRS/WEB.

Valid values: MRS/AP, MRS/Rack, MRS/Tower, MRS/WEB
Default value: MRS/Tower

Connection Type

This field identifies the type of communication used between the AP and the MRS.

Valid values: SERIAL, ETHERNET
Default value: ETHERNET

Device Name

For serial connections only, this field identifies the device name used for the connection between the AP and the MRS. Not supported by Nortel.

Default value: /dev/tty2a

Baud Rate (9600)

For serial connections only, this field identifies the baud rate used for the connection. Not supported by Nortel.

Valid values: 9600 or greater
Default value: 9600

MRS Node Name

For Ethernet connections only, this field identifies the Ethernet node name of the MRS/Tower, or MRS/Rack. Specify the host name of the MRS as defined in the `/etc/hosts` file. For MRS/AP, use `localhost`.

Default value: localhost

Of Reserved Audio Paths

This field identifies the number of Reserved Audio Paths (from 0 to 99). The information you enter in this field is used by the BOUT and CONP cells. If you accept the default value (0), then all paths are used by the BOUT cell. If you specify the maximum value (99), then all paths are used by the CONP cell.

Valid values: 0 through 99
Default value: 0

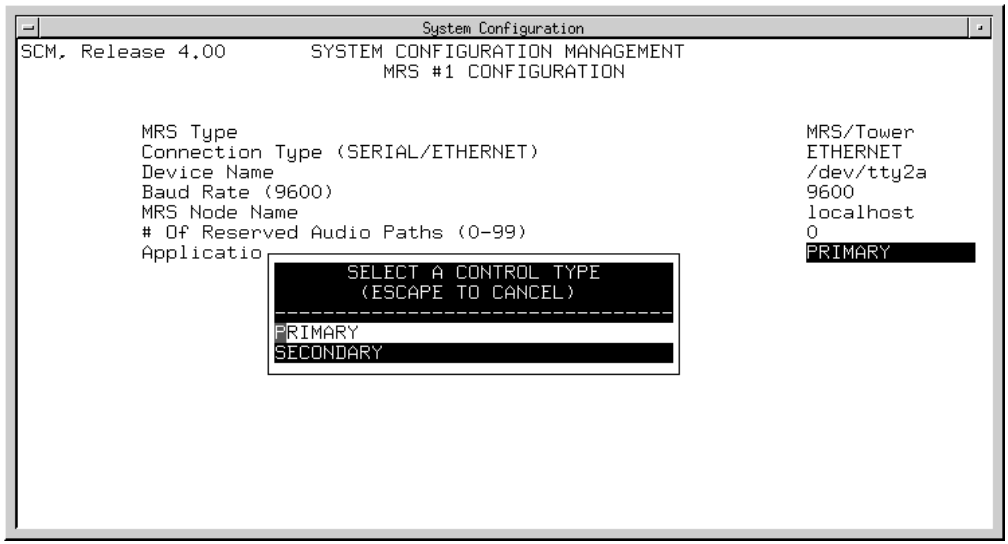
Application Processor Control Type

This field identifies whether the AP is the primary or backup processor (that is, secondary) to the MRS specified.

Valid values: PRIMARY or SECONDARY
Default value: PRIMARY

Figure 2-4 shows the pop-up menu for the control types.

Figure 2-4: Control Types pop-up menu



Configuring the MRS

1. From the System Configuration Management Node Configuration screen, press <F3> to select "MRS."

   The MRS Configuration screen for MRS #1 is displayed.

2. Make any necessary changes by entering a new value directly into a field or by selecting an appropriate value from a pop-up menu.

3. To display a pop-up menu, press the <F1> (POP UP) key. (If no pop-up menu is available for the field, a message is displayed.)

4. If a pop-up menu is available, use the arrow keys to move the cursor to the value you want to select, and press <Enter>.

   The pop-up menu disappears and the value you selected replaces the default value.

5. If you do not want to make a selection, press <ESC> to close the pop-up menu.

   For example, if you move the cursor to the *Application Processor Control Type* field and press <F1>, the SELECT A CONTROL TYPE pop-up menu is displayed, as shown in Figure 2-4. The cursor is currently at PRIMARY. You can use the arrow keys to move the cursor to SECONDARY and press <Enter> to select this option.

6. If the node contains more than one MRS, press <F3> (NEXT MRS).

   The MRS Configuration screen is displayed again for the next MRS. Note that the MRS number in the title is changed.

7. Repeat step 2 for each MRS in the node.

8. You can now configure trunks (see "Configuring trunks" on page 2-21), or, if you are finished making changes, press <F4> (Node) to return to the System Configuration Management Node Configuration screen.

9 From the System Configuration Management Node Configuration screen, press <F4> (EXIT).

The SAVE CHANGES pop-up menu is displayed, as shown below.

10 If you press <F3>, your configuration changes are saved. If you press <F4>, the changes you made in this session are not saved. (Alternatively, you can use the arrow keys to move the cursor to highlight YES or NO and then press <Enter>.)

The System Configuration Management Node Configuration screen closes.

Configuring trunks

The MRS can contain up to 120 T1 or E1 Digital trunks. Analog trunks can be installed in increments of 4 or 16 ports (or 8 or 12 on PEB systems only), up to the maximum available slots. Before you configure the trunks, complete the following steps.

- Select the type of hardware that will control each possible trunk location.
- Select a trunk initialization type for each active trunk in the system.

This section explains how to perform these tasks. It also describes the Trunk Configuration screen, and provides instructions for configuring trunks.

Selecting hardware

You need to determine the type of hardware that will control each possible trunk location. There may be a trunk controlled by a loopstart card or no trunk at all. Check every trunk position and select one of the following trunk types for each position:

Inactive

Choose this type if no trunk exists at this position or if the telco connection is not present.

Ring trip

Choose this type if the trunk is on a loopstart card, or for all trunk interfaces to the MRS.

DID (Direct inward dialing)

Choose this type if the trunk is on a DID card.

ANI (Automatic Number Identification)

Choose this type to use the ANI protocol with the trunk type.

Selecting the trunk initialization type

For each active trunk in the system, select a trunk initialization type. Your selection determines how the trunk performs before control of the call is turned over to the application. The information that follows includes descriptions and charts showing the actions performed by each of the various trunk initialization types.

When choosing a trunk initialization type, consider the following:

- trunk type
- actions desired at each phase of the call sequence

Use the following information to assist you with choosing a trunk initialization type for every trunk position. (Refer to “Selecting hardware” on page 2-21 for information about trunk types.)

The available trunk-initialization types include the following.

Loopstart

Choose this type if you select Ring Trip as the trunk type or if you want to use the trunk-type file in the MRS to control the telco switch interface.

DID1, DID3, DID4, DID5

Choose one of these types if you select DID as the trunk type. Each of these four types performs different call-control activities when DID numbers are received before the application starts.

ANI2, ANI3, ANI4

Choose this trunk initialization type if ANI digits are provided at the beginning of the call in either dual-tone multi-frequency (DTMF) or multi-frequency (MF) format.

ANI uses DTMF and MF. DTMF describes touch-tone (push-button) dialing. When using ANI, AP software applications can receive and store DTMF and MF digits.

> ***Note:*** ANI1 and DID2 trunk initialization types, which were used in earlier releases, no longer apply.

Phases in the call sequence

The trunk types and trunk initialization types play a part in controlling the major phases that may occur in the call sequence. The possible major phases include the following.

Initialization phase

A call arrives at the MRS. If the trunk type is DID or ANI, then digits are accepted during this period. If digits are expected but not received within the time limit, the call is not answered and the application is never notified about the call.

Notification phase

The application is notified about the call. If digits are received during the initialization phase, they are reported to the application. During this phase, tones or prompts may be played, depending on the trunk initialization type. The application has the option of looking up the digits or performing some other form of verification to decide whether to accept or reject the call.

Rejection phase

The call is rejected by the application. If the call is rejected, the application hangs up; if this occurs, an option is available for the application to play tones or prompts before hanging up.

Application phase

The call is accepted and processed by the application.

Hang-up phase

The call ends. An option is available for the application to play prompts before hanging up.

> ***Note:*** In some localities, it may be illegal to play tones or prompts before a call is answered or when a call is rejected. For further information, contact your local carrier.

Trunk initialization types in the call sequence

The following list explains how each of the trunk initialization types handles an incoming phone call.

Loopstart

The call enters the MRS. The application is notified as soon as the call enters the system. Digits are not provided. If the call is accepted, the line is taken off-hook and the application processes the call. If the call is not accepted, a ring-no-answer condition exists and the caller hears ringing. See Figure 2-5, “Call sequence for the loopstart trunk initialization,” on page 2-26.

DID1

The call enters the MRS. The switch is polled for DTMF digits. If the digits are received, the line is taken off-hook and the application processes the call. If the call is not accepted, the caller hears no tone. See Figure 2-6, “Call sequence for DID1 trunk initialization type,” on page 2-27.

DID3

The call enters the MRS. The switch is polled for DTMF digits. If the call is accepted, the line is taken off-hook and the application processes the call. If the call is not accepted, the caller hears a reorder tone. See Figure 2-7, “Call sequence for DID3 trunk initialization type,” on page 2-28.

DID4

The call enters the MRS. The line is taken off-hook and the switch is polled for DTMF digits. If the call is accepted, the application processes the call. If the call is not accepted, the caller hears a reorder tone. See Figure 2-8, “Call sequence for DID4 trunk initialization type,” on page 2-29.

DID5

The call enters the MRS. The line is winked (a supervisory signal is sent to the switch indicating that the MRS is ready to accept input), and the switch is polled for DTMF digits. The call is accepted, the line is taken off-hook, and the application processes the call. If the call is not accepted, the caller hears a reorder tone. This simulates one of the standard call sequences. See Figure 2-9, “Call sequence for DID5 trunk initialization type,” on page 2-30.

ANI2

The call enters the MRS. The line is winked, and the switch is polled for MF digits. If the call is accepted, the line is taken off-hook and the application processes the call. If the call is not accepted, the caller hears no tone. See Figure 2-10, “Call sequence for ANI2 trunk initialization type,” on page 2-31

ANI3

The call enters the MRS. The switch is polled for MF digits. If the digits are received, the line is winked (a supervisory signal is sent to the switch indicating that the MRS is ready to accept input) and the switch is polled for a second set of MF digits. If the call is accepted, the line is taken off-hook and the application processes the call. If the call is not accepted, the caller hears no tone. See Figure 2-11, “Call sequence for ANI3 trunk initialization type,” on page 2-32.

ANI4

The call enters the MRS. The switch is polled for DTMF digits. Once the digits are received, the line is winked, and the switch is polled for MF digits. If the call is accepted, the line is taken off-hook and the application processes the call. If the call is not accepted, the caller hears no tone. See Figure 2-12, “Call sequence for ANI4 trunk initialization type,” on page 2-33.

The charts on the following pages illustrate the differences among trunk initialization types.

Figure 2-5: Call sequence for the loopstart trunk initialization

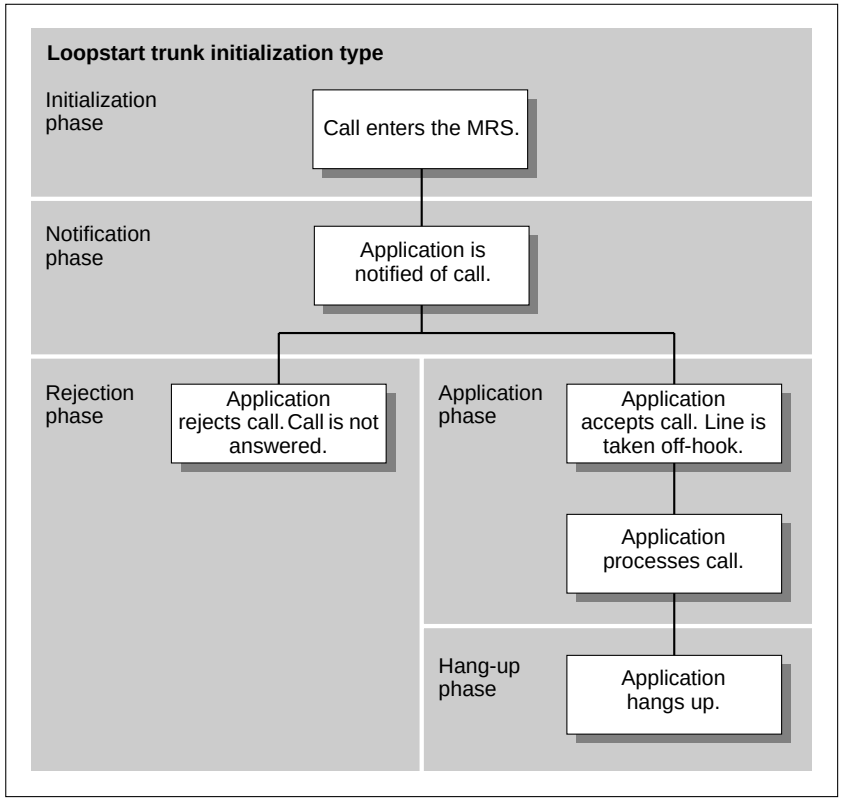


Figure 2-6: Call sequence for DID1 trunk initialization type

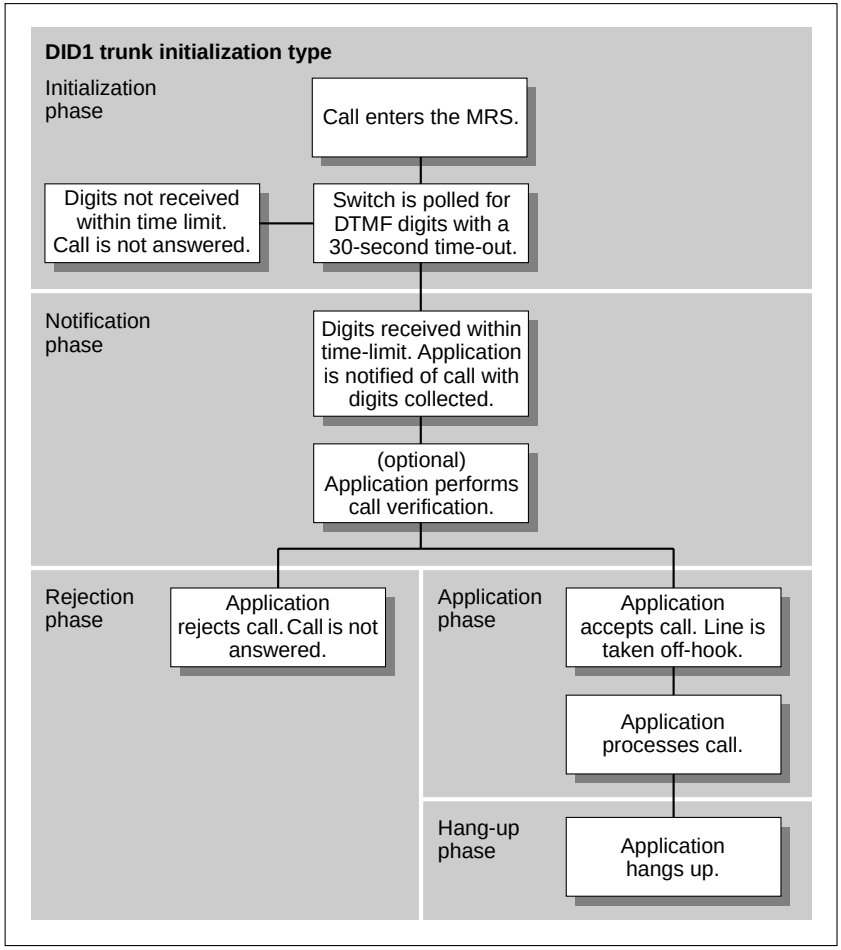

DID1 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered.
Switch is polled for DTMF digits with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101037

Figure 2-7: Call sequence for DID3 trunk initialization type

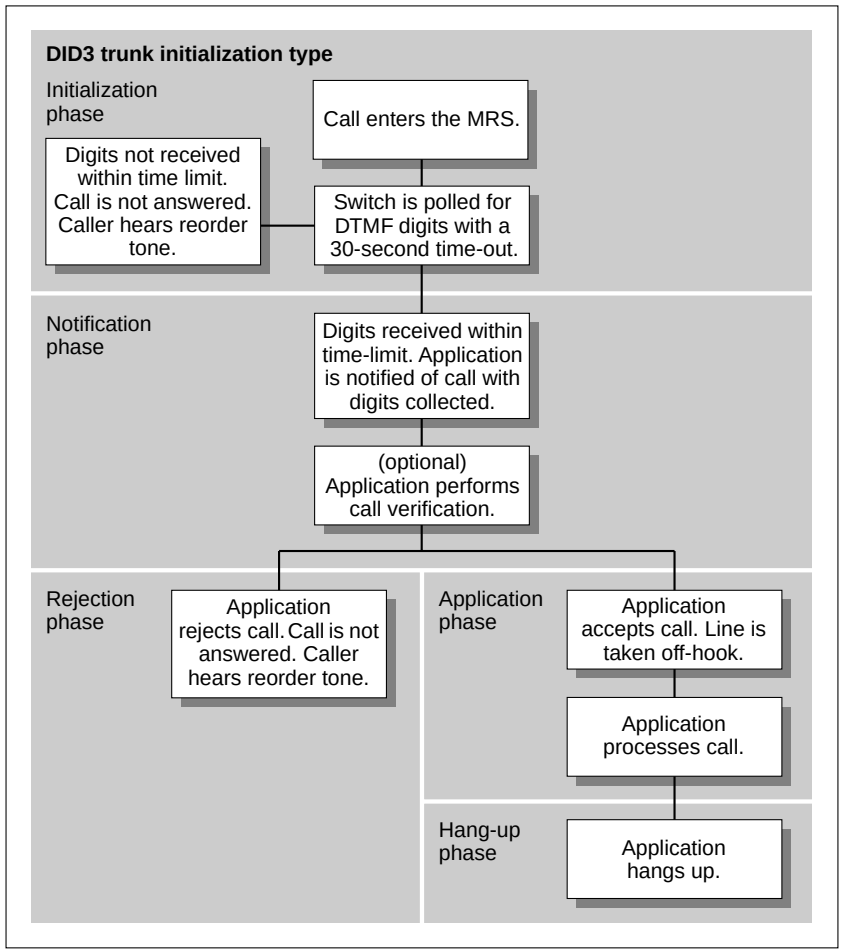

DID3 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered. Caller hears reorder tone.
Switch is polled for DTMF digits with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered. Caller hears reorder tone.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101038

Figure 2-8: Call sequence for DID4 trunk initialization type

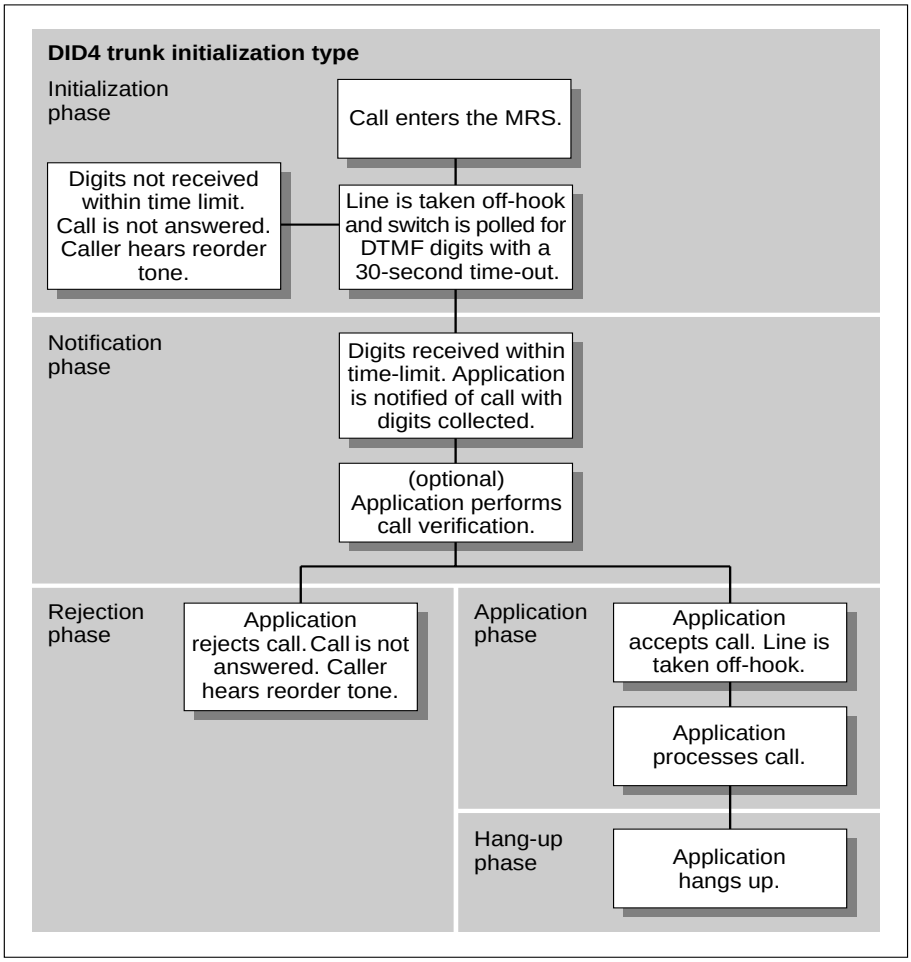

DID4 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered. Caller hears reorder tone.
Line is taken off-hook and switch is polled for DTMF digits with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered. Caller hears reorder tone.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101039

Figure 2-9: Call sequence for DID5 trunk initialization type

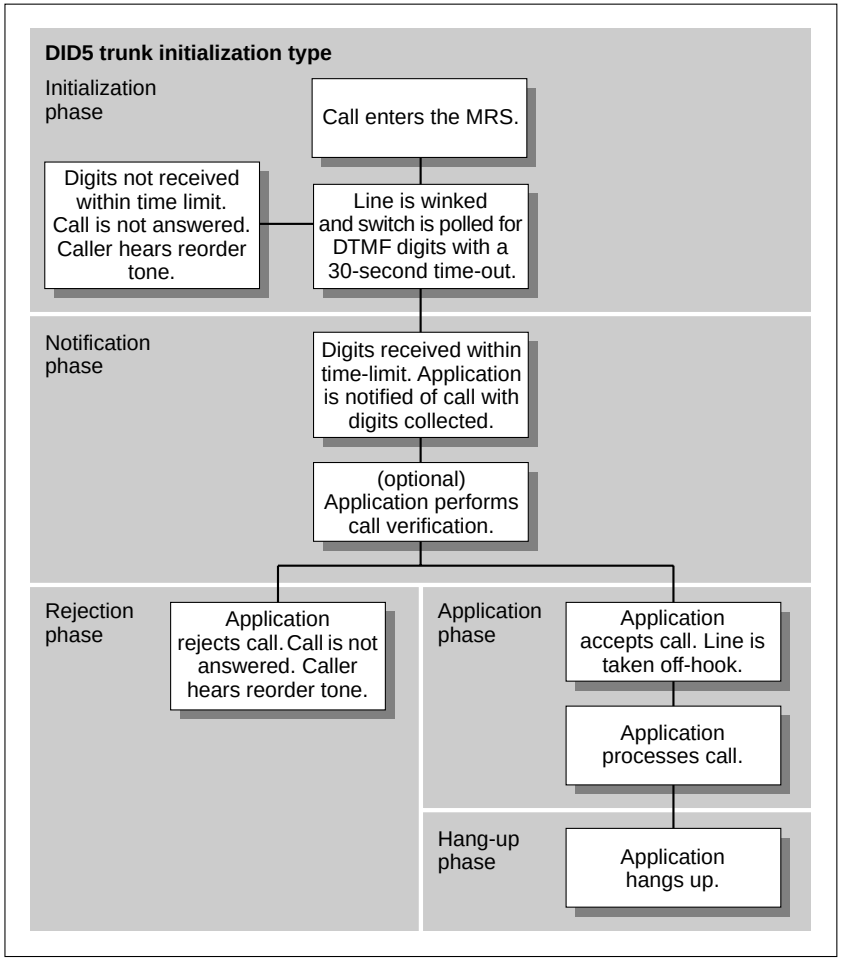

DID5 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered. Caller hears reorder tone.
Line is winked and switch is polled for DTMF digits with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered. Caller hears reorder tone.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101040

Figure 2-10: Call sequence for ANI2 trunk initialization type

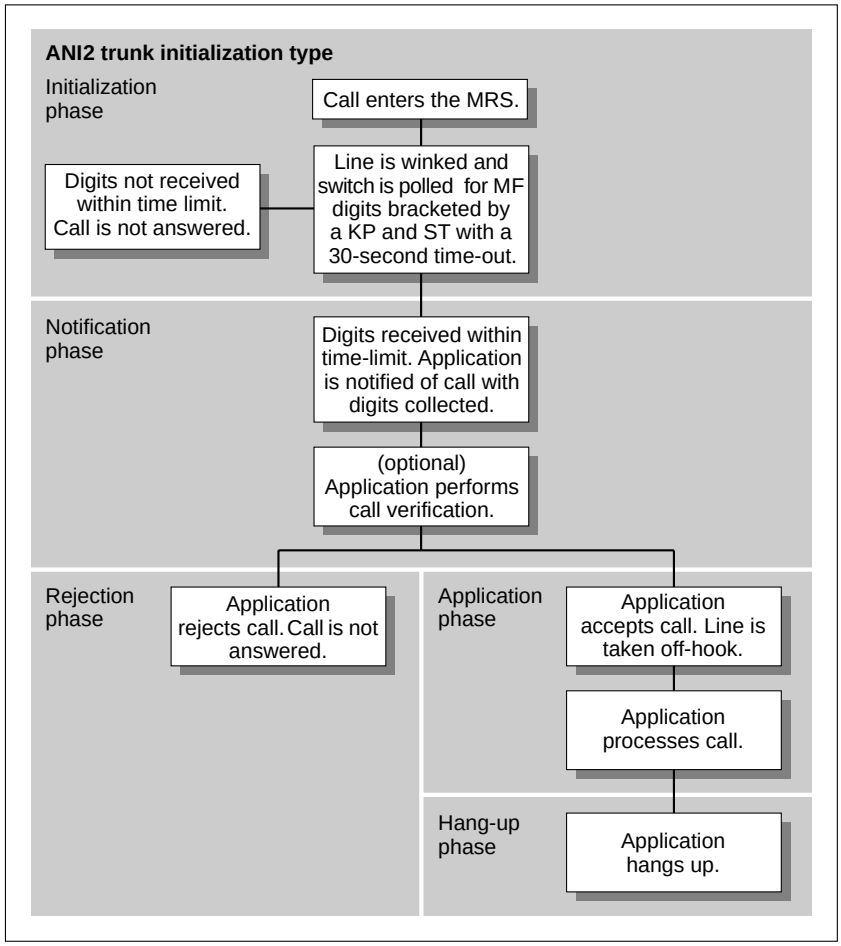

ANI2 trunk initialization type
Initialization phase
Call enters the MRS.
Line is winked and switch is polled for MF digits bracketed by a KP and ST with a 30-second time-out.
Digits not received within time limit. Call is not answered.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101041

Figure 2-11: Call sequence for ANI3 trunk initialization type

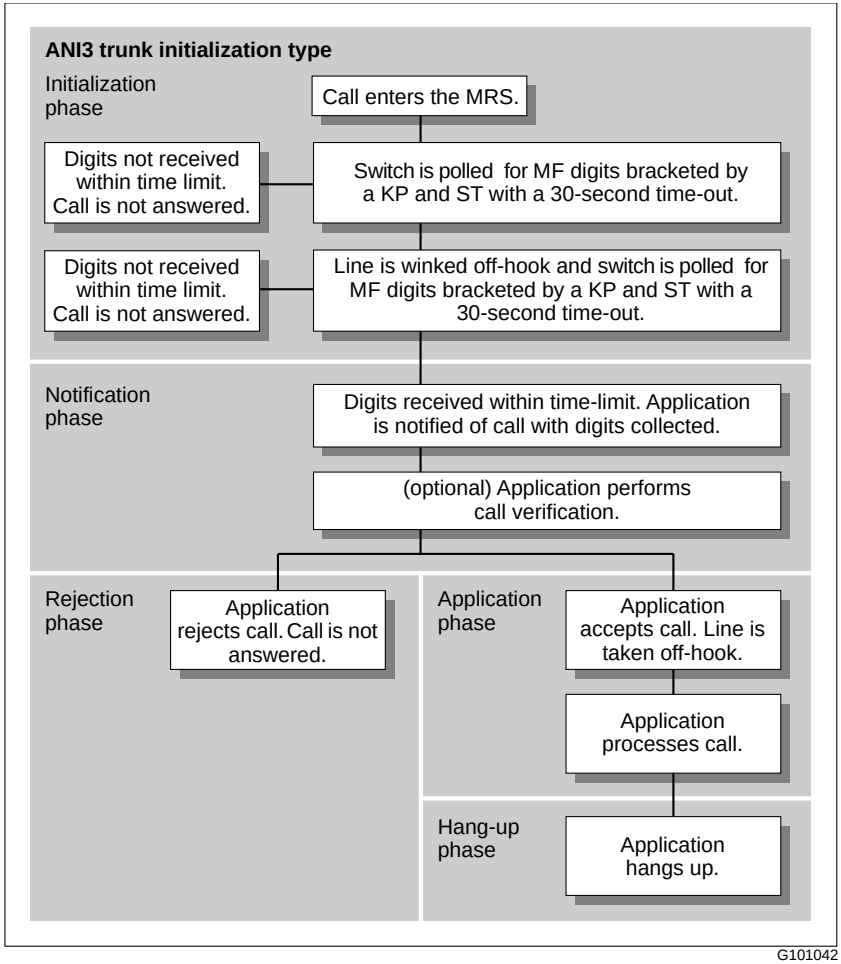
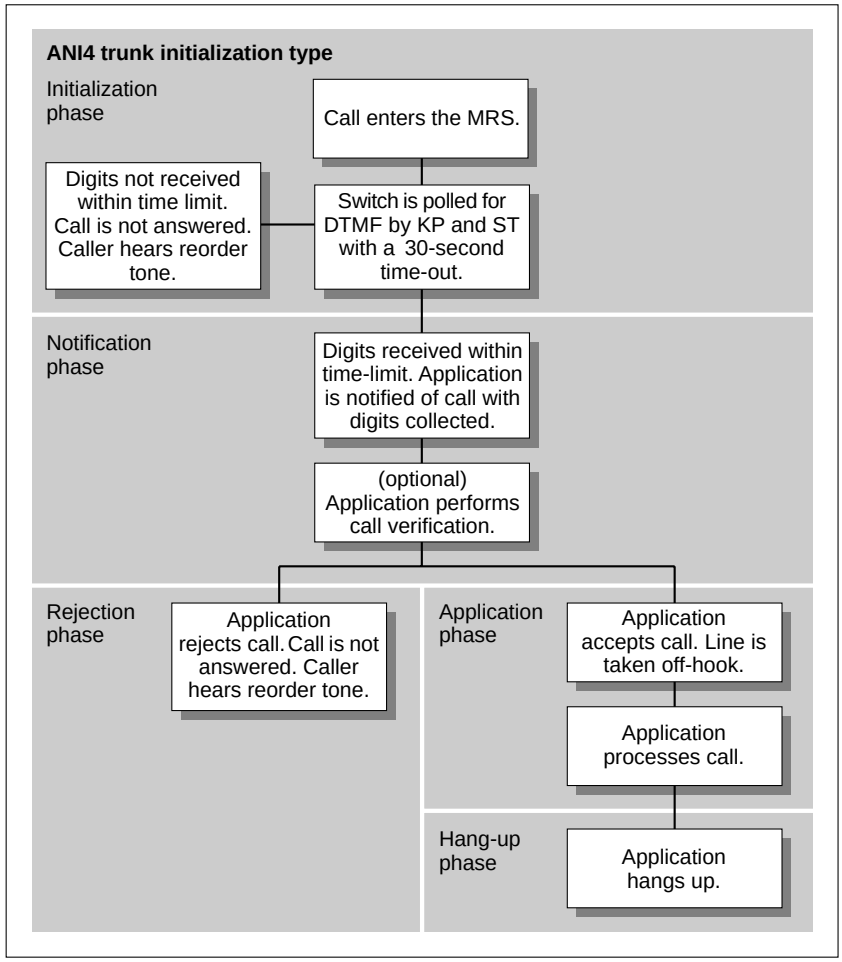

ANI3 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered.
Switch is polled for MF digits bracketed by a KP and ST with a 30-second time-out.
Digits not received within time limit. Call is not answered.
Line is winked off-hook and switch is polled for MF digits bracketed by a KP and ST with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101042

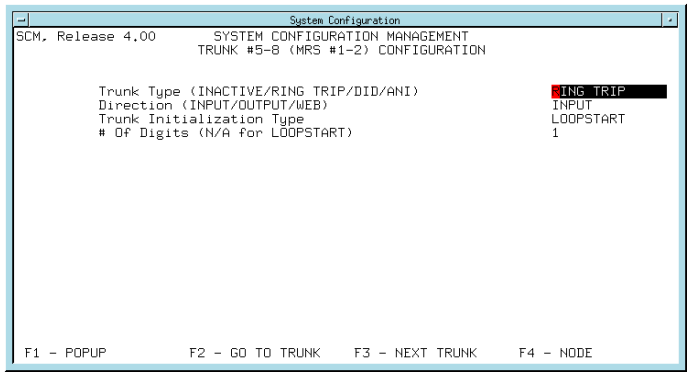
Figure 2-12: Call sequence for ANI4 trunk initialization type


ANI4 trunk initialization type
Initialization phase
Call enters the MRS.
Digits not received within time limit. Call is not answered. Caller hears reorder tone.
Switch is polled for DTMF by KP and ST with a 30-second time-out.
Notification phase
Digits received within time-limit. Application is notified of call with digits collected.
(optional) Application performs call verification.
Rejection phase
Application rejects call. Call is not answered. Caller hears reorder tone.
Application phase
Application accepts call. Line is taken off-hook.
Application processes call.
Hang-up phase
Application hangs up.
G101043

Trunk Configuration screen

This section provides information on the fields in the `Trunk Configuration` screen.

Figure 2-13: Trunk Configuration screen



The node and trunk numbers are displayed at the top of the screen. The screen also contains the following fields.

Trunk Type

This field identifies the type of trunk on the MRS.

Valid values:

- **INACTIVE** Choose this type if no trunk or telco connector currently exists at this position.
- **RING TRIP** Choose this type if the trunk is on a loopstart card.
- **DID** (direct inward dialing) Choose this type if the trunk is on a T1 or DID card and the DID option is installed.
- **ANI (**Automatic Call Number Identification) Choose this type if the incoming telco line provides ANI.

Default value: INACTIVE

Direction

Choose the direction for this parameter.

Valid values:

- **INPUT** Choose this direction if the system can receive calls only to that channel.
- **OUTPUT** Choose this direction if the system can initiate calls only through DOUT and BOUT.
- **WEB** Choose this direction to enable a channel for Web call-processing.

Default: INPUT

Trunk Initialization Type

Refer to the discussion of trunk type files (see “Selecting the trunk initialization type” on page 2-22.) The trunk initialization type is overridden by the trunk type files on the MRS.

Of Digits

Sets the number of digits accepted at the beginning of a call on a DID trunk. If more than the specified number of digits is received, then the system takes the necessary digits from the beginning of the sequence and drops the remaining digits.

Configuring trunks

Although this procedure and the screen refer to “trunks,” this terminology is actually referring to individual “channels.”

To configure trunks on your MRS, follow these steps.

1 From the Administration tools button on the Control Panel, select `System Configuration`.

The `System Configuration Management Node Configuration` screen is displayed.

2 From the `Node Configuration` screen, press <F2> to select “Go To Trunk.”

The following prompt is displayed:

`Enter TRUNK or MRS`*`: TRUNK`* `(MRS & TRUNK May Be Ranges, e.g., ‘1-2:16-32’): 1:0`

3 Type the MRS and trunk number of the trunk you want to edit, or, if several trunks are consecutive and use the same configuration, you can save time by configuring them at the same time.

4 To configure more than one trunk (channel), enter a range of MRSs or a range of trunks, or both. The first number or range (before the colon) represents the MRSs. The second number or range (after the colon) represents the trunks (channels). For each range, type the first number, a hyphen, and then the last number.

For example, if you have one T1 card in the MRS, with 24 channels, type **`1:0-23`** without spaces. If you have multiple MRSs, each with 48 channels, type **`1-3:0-47`** without spaces.

CAUTION

Risk of data loss

If a range of MRSs or trunks is entered when configuring more than one trunk (channel), all channels will be configured to match the first one that was set in the range.
Do not perform a range to look at the setup of existing channels, as this command will over-write all of them to match the first one in the range.

5 Press <Enter>.

The `Trunk Configuration` screen for the trunks in your list is displayed, as shown in Figure 2-13. Note that the node and trunk numbers are displayed at the top of the screen.

6 Make any necessary changes by entering a new value directly into a field or by selecting an appropriate value from a pop-up menu. (The easiest way to enter a new value is to use a pop-up menu and highlight your choices.)

7 To display a pop-up menu, press the <F1> (`POP UP`) `key`.

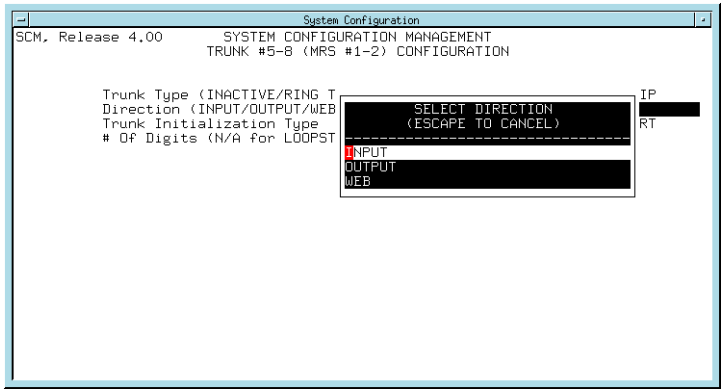
If a pop-up menu is available, you will see a menu that lists the acceptable values for the data field where the cursor is located. (If no pop-up menu is available for the field, a message is displayed.)

Use the arrow keys to move the cursor to the value you want to select, and then press <Enter>.

The pop-up menu disappears and the value you selected replaces the default value.

8 If you do not want to make a selection, press <Esc> to close the pop-up menu.

For example, if you move the cursor to the *Direction* field and press <F1>, the `DIRECTION` pop-up menu is displayed. The cursor is currently at `INPUT`. You can use the arrow keys to move the cursor to the desired option, and press <Enter> to select it.



9 You can configure another trunk. To display the trunk, press <F3> (NEXT TRUNK), or repeat steps 2 to 5. Then repeat step.

If you are finished making changes, press <F4> (Node) to return to the `Node Configuration` screen.

10 From the `Node Configuration` screen, press <F4> (EXIT).

The `SAVE CHANGES` pop-up menu is displayed, as shown below.

11 If you press <F3>, your configuration changes are saved. If you press <F4>, the changes you made in this session are not saved. (Alternatively, you can use the arrow keys to move the cursor to highlight `YES` or `NO` and then press <Enter>.) The `System Configuration Management` screen closes.

Applying changes to the system configuration

When you boot the AP, its software is automatically started in the background and the configuration is verified by the License Manager. When you configure the node, MRSs, and trunks (or whenever you modify the system configuration settings) and save your changes, you must reset the AP software; otherwise, the previous settings stay in effect.

The License Manager file controls the allocation of resources of the AP(s) and MRS(s) on the system. The configuration must match the original license file exactly. Any change, such as moving resources from one MRS to another, will require a new licence.

Resetting OPEN IVR

To reset OPEN IVR, use one of the following methods.

Method 1

1. Select `Administration tools` from the System Console.
2. Select the `Reset OPEN IVR` option from the `Administration tools` menu

Method 2

1. Enter `/u/nortel/tools` directory at the system prompt to access the tools directory.
2. Type **`greset`** at the system prompt and press <Enter>.

AP software must be running in order to perform the following activities:

- Start applications with the Application Management interface.
- Load applications.
- Use the Prompt Loading Facility (PLF).
- Use the Database Editor to work on information databases.

You can change the configuration settings while AP software is running, but the changes do not take effect until AP software is reset again.

You can perform the following activities when AP software is not running:

- Create or edit applications with the Application Editor.
- Run reports from the `Report tools` option from the Control Panel.

Chapter 3: Managing applications

Administration tools includes a facility for managing your OPEN IVR applications. Using Application Management, you can load/unload applications, assign applications to different channels, and start or stop execution. You can also create scripts to automate the process of loading and running applications.

Developing, testing, and modifying applications on a live system

Symposium OPEN IVR systems include both a development and a runtime capability so that IVR applications can be developed and tested on the same system. Therefore, you can make minor modifications to an existing application while the system is running. For example, an airline that has just announced a seat sale can quickly add a new selection to a voice menu. This capability does not apply to the runtime system; it applies only to the development system.

If the OPEN IVR system is being used for new application development or application modification in a “live” customer environment, use caution to ensure that the new application development/testing does not affect existing running applications. In particular, the following cautions and recommendations should be noted.

CAUTION

Risk of data loss

Never change the live application. The application developer should make a copy of the application, modify the copy, test the copy on a dedicated test channel isolated from normal customer traffic, and then replace the application with the new modified version.

Response times can be affected

Online development using the Application Editor consumes CPU cycles, which affects the response times of running applications. To minimize the risk, such changes should be made during a relatively low traffic period..

CAUTION

Risk of system damage

Apply extreme caution in testing custom “C” code.

Applications that use customer user functions (“C” code) should not be tested on a live system, as a poorly written, untested custom “C” program can cause the IVR reset.

In addition, compiling “C” code on a live system users a lot of CPU cycles, which can affect the response time of live applications.

Ensure that the test environment is isolated

While testing new applications, ensure that the application test environment classes, such as IVR channels, and ACD routing, are fully isolated from the live applications and, as such, do not affect live applications. Nortel recommends that you follow these guidelines:

- Preliminary testing by the VAD on a captive development OPEN IVR system is necessary but not sufficient. Controlled testing to prove the sanity of the application on a live system is still needed even after the best efforts of testing on a captive development system.
- To minimize the risk of service interruptions, new or modified call-flow applications should be tested in three phases:

Phase 1

Test channels in isolation from receiving customer traffic; tester-generated traffic only.

Phase 2

A single-monitored test channel receiving customer traffic.

Phase 3

A few monitored test channels receiving customer traffic.

- The tester must understand the distinctions between OPEN IVR logical channel acquisition type (dedicated versus shared), voice service channel service type, and PBX ACD traffic routing. “Dedicated” test channels refer to channel dedication for a specific function, such as running a test application, rather than a dedicated voice channel.

  If possible, testing of new or modified applications should be done on test channels of dedicated acquisition type so as not to affect live applications when setting up or taking down the isolated test environment.

  Note: Some applications (such as those using the Prompt Update on Next Cell feature) require that OPEN IVR logical channels be configured for shared acquisition type.

Dedicated channel acquisition type

Dedicated acquisition type ties an OPEN IVR logical channel to an individual voice channel. Test traffic can be routed to the application that is being proved. This can be done by assigning the ACD Agent Position for the test channel to an ACD queue that can be dedicated to routing test calls only. This is achieved most conveniently by using ACD Automatic Overflow. It changes the Overflow DNs to selectively route live customer traffic into the test channel during Phase 2 and Phase 3 testing, and whenever it is not being used for testing. During Phase 1 testing, customer traffic can be prevented from overflowing into the test channel.

Shared channel acquisition type

Shared acquisition type depends on the ACCESS class defined for the logical channel and for the dialed DN in the VSDN table. The OPEN IVR logical channel is tied to the dialed DN (and not to any individual voice channel). Establishing an isolated test environment with shared acquisition type involves configuring an OPEN IVR logical channel with an ACCESS class that is dedicated to the test application and the dialed DN.

- With shared acquisition type, it is impossible to switch a logical channel between customer traffic and tester-generated traffic without interrupting service on all channels. This is because the switch is accomplished by changing the class of the logical channel through OPEN IVR system configuration. Reconfiguring a single logical channel requires that all OPEN IVR channels be stopped and restarted, which momentarily interrupts service on all live applications.
- ACD traffic routing on the PBX must be controlled so that the number of voice channels that can present calls to VSDNs of a given class do not exceed the number of active OPEN IVR logical channels configured for the given class. Otherwise, some calls will be answered, only to be transferred to the Revert DN. The Overflow DNs can be changed to prevent excess calls from being presented to logical channels of shared acquisition type.

• Outbound applications cannot be set to run exclusively against a particular OPEN IVR logical channel. It is therefore impossible to establish an isolated test environment for outbound applications on a live system.

• OPEN IVR Application Management provides the capability to stop an application gracefully or forcefully.

- “Stop Forcefully” idles logical channels that are hung either to User Function Cell failure or to other application problems. It does not recover logical channels that are out of service due to out of service voice channels.

- To minimize service interruption when using “Stop Forcefully” to recover hung OPEN IVR logical channels, load a separate instance of a given application (copied and suitably renamed) for each logical channel or small range of logical channels. Use “Stop Gracefully,” monitor the channel board lights until only the hung channel is still busy, and then use “Stop Forcefully” to recover the hung channel.
- Until the application for the range of channels is restarted, customer calls are routed to the stopped channels. Each call is answered and transferred back to the dialed DN, which puts the caller to the back of the queue. The original CLID can be replaced by the Agent Position ID of the transferring agent.

- When testing applications that use new or modified voice prompts, before making changes to the files using the Voice Prompt Editor, it is critical that existing voice segment files are backed up. This is done by copying them to tape using the Prompt Import Utility.
- You must create a dedicated test mailbox. The OPEN IVR test channels must be configured to use the dedicated test mailbox. If voice segments are to be added or modified, then the backup of the voice segment files currently in use must be copied into the test mailbox. All changes should be thoroughly tested before copying the modified voice segment files into the mailbox that provides the voice prompts for customer traffic.

  Note: Changing the mailbox for a single logical channel in OPEN IVR system configuration requires restarting all OPEN IVR channels in order for the reconfiguration to take effect.

Managing applications checklist

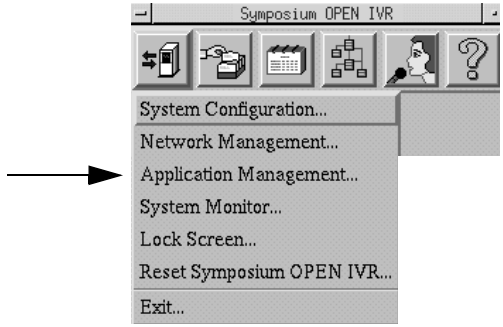
Use the following procedure checklist when setting up applications on your Symposium OPEN IVR system for the first time. After you have loaded and run applications for the first time, you can use this checklist as a reference.

Procedure	Completed
“Accessing Application Management tools” on page 3-7	
“Choosing trunk and channel numbers” on page 3-9	
“Creating a directory” on page 3-10	
“Loading an application” on page 3-11	
“Assigning channels to an application” on page 3-14	
“Starting an application” on page 3-16	
“Assigning channels to an application” on page 3-14	
“Creating a reboot.sai script” on page 3-27	
“Stopping an application” on page 3-28	
“Unloading an application” on page 3-31	
“Exiting from Application Management” on page 3-32	
“Logging out” on page 3-33	

Accessing Application Management tools

To access Application Management tools, follow these steps.

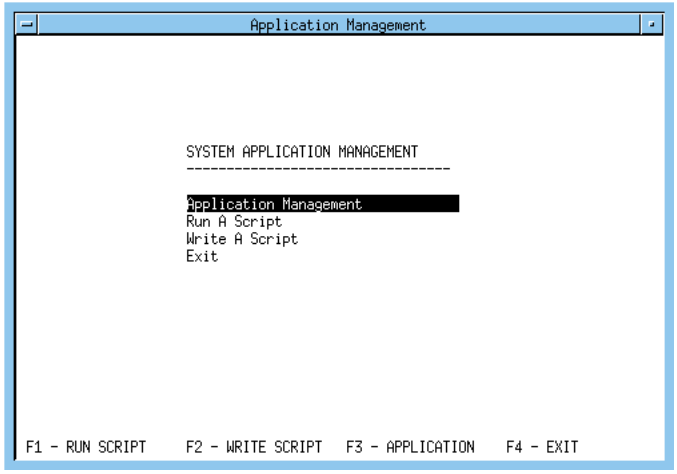
1 From the Control Panel, click the Administration button, and select `Application Management` from the menu.



An outline for the Application Management window appears on the desktop.

2 Move the cursor to where you want to place this new window, and click MB1 to release the window on the desktop.

The Application Management window is displayed.



3 Alternatively, you can start the Administration Interface from the system shell. Change the current directory to `exe` in the home directory of AP software. From within a UNIX shell, type the following command at the shell prompt:

```
sai_start
```

4 From a non–X-Window environment, type the following command:

```
sai
```

Note: If you work from a non–X-Window environment, configure your system for the correct TERM type in order to access FX function keys. The default is ANSI.

Whether you access the Administration tools from the Control Panel or the shell prompt, the Application Management window is displayed.

5 Move the cursor to the item you wish to select and press <Enter>. You can also use the function keys shown at the bottom of the screen to select some menu items. Note that you cannot select or invoke functions using the mouse.

Note: The key sequences and related functions are as follows:

Up arrow	Moves the cursor up one line.
Down arrow	Moves the cursor down one line.
Left arrow	Moves the cursor to the top of the page or to the previous page.
Right arrow	Moves the cursor to the bottom of the page or to the next page.
<Enter>	Invokes the highlighted selection.
<F1>	Selects `Run A Script`.
<F2>	Selects `Write A Script`
<F3>	Selects `Application`.
<F4>	Selects `Exit`.

Choosing trunk and channel numbers

Trunk numbers label the trunks within MRS systems. They identify the ports within each MRS (for example, 0–47).

Channel numbers label the trunks within one node, which may include more than one MRS system. They are consecutively numbered and identify the ports assigned to applications in a node. Refer to the tables on the next few pages for examples of channel assignments in single or multiple MRS nodes where all the trunks are activated.

> ***Note:*** The following sections give examples of trunk and channel numbers for MRSs where all trunks are activated. For example, if only 11 trunks on an MRS are activated (numbered from 0 to 10), then the first trunk on the second MRS is channel 11.

Each MRS/AP can contain a maximum of 96 trunks when fully loaded.

Each MRS/Tower can contain up to 120 T1 or E1 Digital trunks, or 48 to 96 Analog trunks, depending upon available slots. For a node that includes three MRS/Towers, the trunk and channel numbers are distributed as shown in Table 3-1.

> ***Note:*** In multiple MRS configurations, consult your system configuration to determine which channels are configured on each MRS. Messages must be retrieved separately from each MRS.

Table 3-1: MRS/Tower trunks and corresponding channel numbers

	MRS/Tower #1	MRS/Tower #2	MRS/Tower #3
Trunk numbers	0–47	0–47	0–47
Channel numbers	0–47	48–95	96–143

You can use any combination of MRSs. The channel numbers for each different MRS are distributed as if the MRSs are the same.

> ***Note:*** An MRS/AP is a self-contained unit; that is, AP software and MRS software all reside on the MRS/AP.

Table 3-2 shows trunk and channel numbers for partially loaded MRSs (where not all trunks are activated). For example, if 11 trunks are activated in MRS/Tower #1 (numbered from 0 to 10) then the first trunk in MRS/Tower #2 is the twelfth trunk, numbered 11.

Table 3-2: MRS with some trunks not activated: Trunks and corresponding channel numbers

	MRS/Tower #1	MRS/Tower #2	MRS/Tower #3
Trunk Numbers	0–11	0–23	0–11
Channel Numbers	0–11	12–35	36–47

Choosing and using directories

This section provides instructions for creating directories as well as for copying applications from one directory to another.

You can start applications only from the directory `/apps` located in the AP software account or home directory. Do not edit an application in the runtime directory because you could disrupt service if you try to edit an application while it is running. Develop your applications in another directory; then copy the applications to the runtime directory.

Creating a directory

To create a directory in which to develop applications, follow this step.

1 In a UNIX shell, type the following `mkdir` command at the shell prompt, where *`directory_name`* is the name of your new directory.

`mkdir directory_name`

For example, to create a directory named devel_apps, type the following:

`mkdir devel_apps`

Copying a file

Keep a copy of the application in the development directory so you can use it as the basis for building the next version of the application.

To copy a file to another directory, follow this step.

1 In a UNIX shell, type the following `cp` command at the login shell prompt:

`cp source_directory_name/file_name target_directory_name`

AP software adds the extension `.vpf` to the name of every application file.

For example, if you create an application called "weather", AP software names this application file `weather.vpf`.

If your development directory, `devel_apps`, is located in the base directory of AP software, you can copy this application to your directory `/apps` by changing the current directory to the home directory of the AP software account, and then typing the following command at the shell prompt:

`cp devel_apps/weather.vpf apps`

Note: All application file names are assigned an extension of `.vpf` when saved.

Loading an application

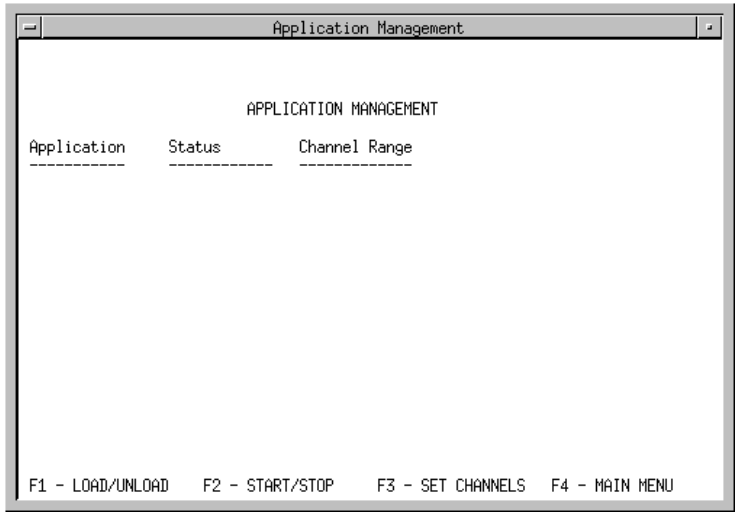
After you create an application, you can load the application and assign a set of channels. The loading process opens the databases for the application databases and starts any user function that is associated with the application. Once loaded, an application cannot process telephone calls until it is started and channels are assigned.

Develop applications in another development directory and then copy them to your directory `/apps` in order to load them.

To load an application and assign channels, follow these steps.

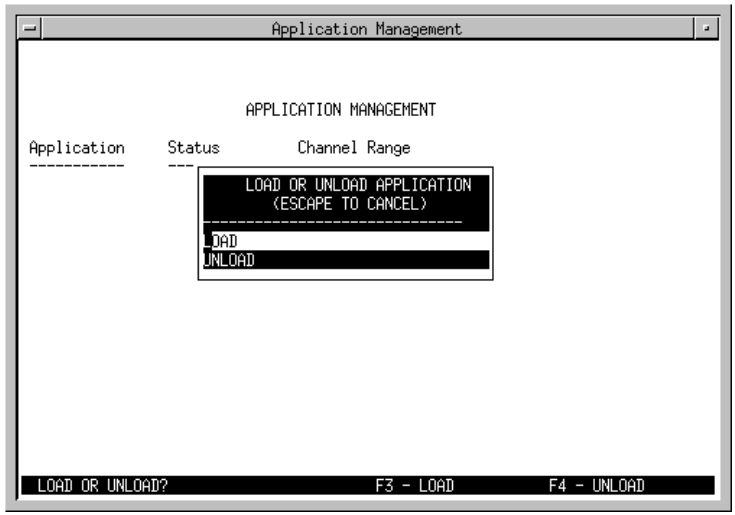
1 From the Application Management window, press <F3> for "Application" or move the cursor to `Application Management` and press <Enter>.

The Application Management window is displayed.



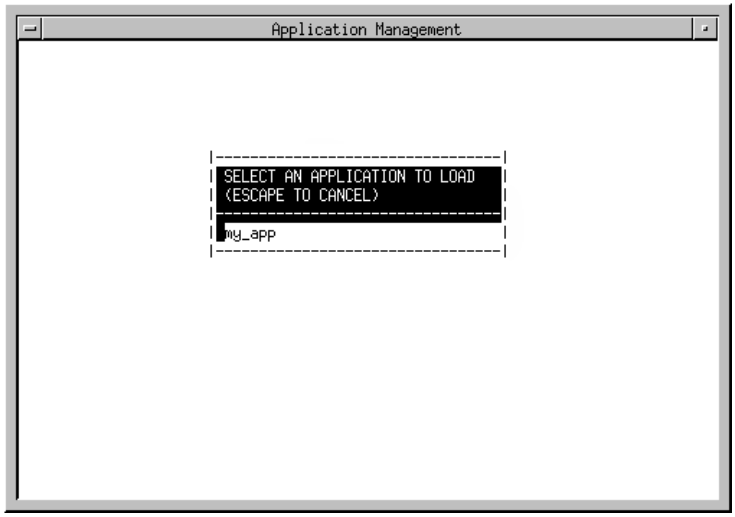
2 Press <F1> for “LOAD/UNLOAD.”

The Load or Unload Application pop-up window is displayed



3 Press <F3> or move the cursor using the arrow keys to “LOAD” and press <Enter>.

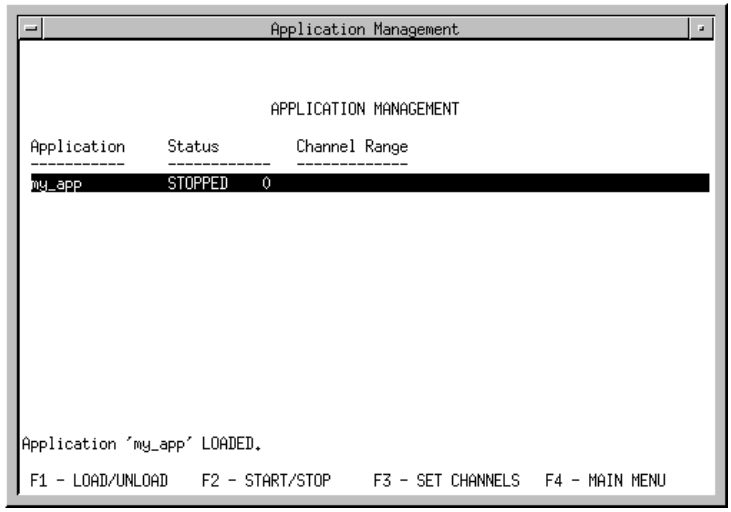
The `Select an Application to Load` pop-up menu is displayed, which lists all applications in the directory `/apps`. In this example, the application name is `my_app`. Using this menu, you can navigate through directories and subdirectories.



4 Using the arrow keys, highlight the name of the application you want to load, and press <Enter>.

The `Application Management` screen is displayed. The name of the application appears in the `Application` column to show that the application is loaded.

The word STOPPED is displayed in the Status column to indicate that the application is loaded but not running. After the word STOPPED, the number 0 is displayed to indicate that the application is not loaded on any channels. If, for example, you select the application called my_app, you see the following information displayed on the Application Management screen.



The following message is also displayed:

```
Application 'my_app' LOADED.
```

5 After you load the application, assign the application to one or more channels.

Assigning channels to an application

After you have loaded your application, follow these steps to assign channels to your application.

1 Press <F3> for SET CHANNELS.

The following prompt is displayed:

```
Enter The Channel Range:
```

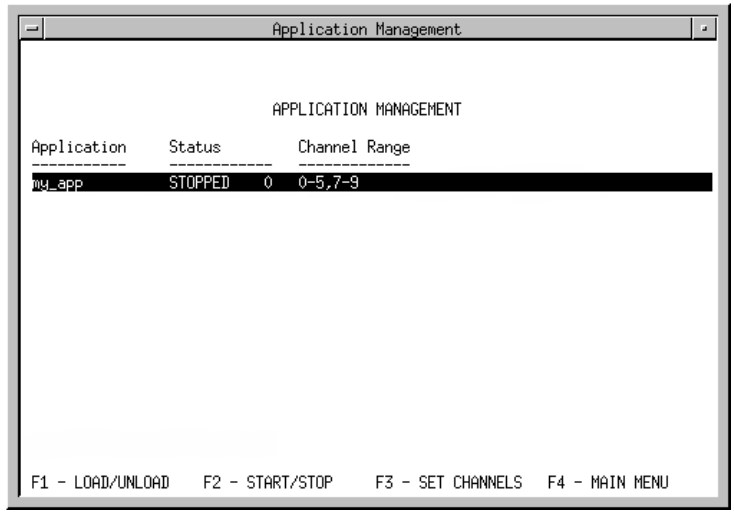
2 Type a channel number or a range of channel numbers, and press <Enter>.

Note: To specify a range of channels, type the starting channel number, a hyphen, and the ending channel number. Use commas to separate ranges. For example, to assign the application to channels 0, 1, 2, 3, 4, 5, 7, 8, and 9 (no 6), type the following ranges without spaces:

`0-5,7-9`

The range you enter is displayed in the Channel Range column of the `Application Management` screen. (If you choose a channel where another application is already loaded, an error message is displayed.)

Note that the Status column continues to display `STOPPED` to indicate that the application is not running on any channels, as shown in the following screen.



Note: You may assign channels to outbound applications that are scheduled using the DELV cell and dedicated to that application only. However, do not assign channels to applications if they are called by other applications via the GSUB or EXEC cell.

Starting an application

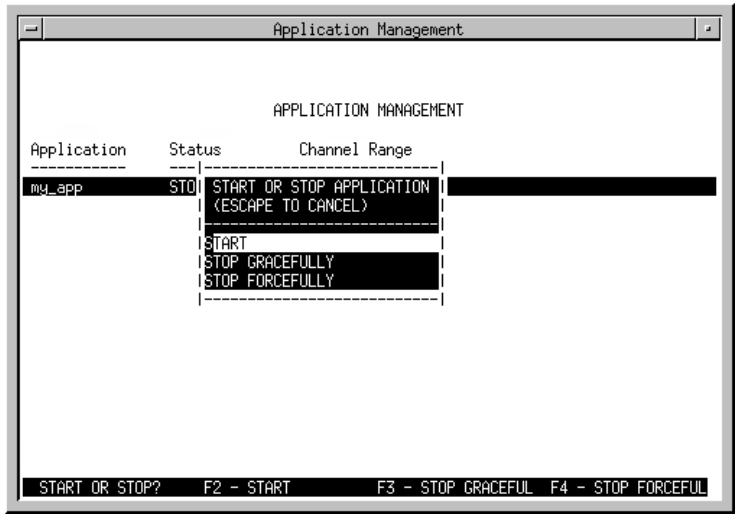
You can run an application after it is loaded and channels are assigned.

To start an application, follow these steps.

1 From the Application Management window, press <F3> for Application (or move the cursor to `Application Management` and press <Enter> to display the `Application Management` screen).

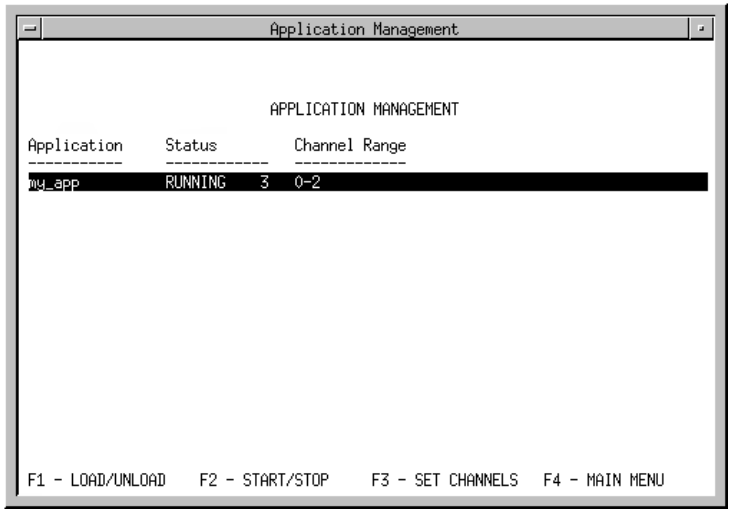
2 Use the arrow keys to highlight the name of the application you want to start. Press <F2> for “START/STOP”.

The START OR STOP APPLICATION pop-up menu is displayed.



3 Press <F2> or use the arrow keys to highlight “START” and press <Enter>.

The screen showing the name, status, and channel range for the application is displayed. For example, the following Application Management screen shows the status and channel range for the application `my_app`.



Note: The channel range lists the range of channels on which the application is running. Check to see that the application is running on the number of channels that you selected. The status of the application changes from `STOPPED` to `RUNNING 3`. The number 3 indicates the number of channels assigned to this application.

If you designate that you want AP software to stop gracefully while calls are in process, the following message is displayed:

`stopping` *x*

where *x* indicates the number of channels still running on the application. The value for *x* decrements until all calls are completed. Once the calls are completed, the following system message is displayed:

`stopped`

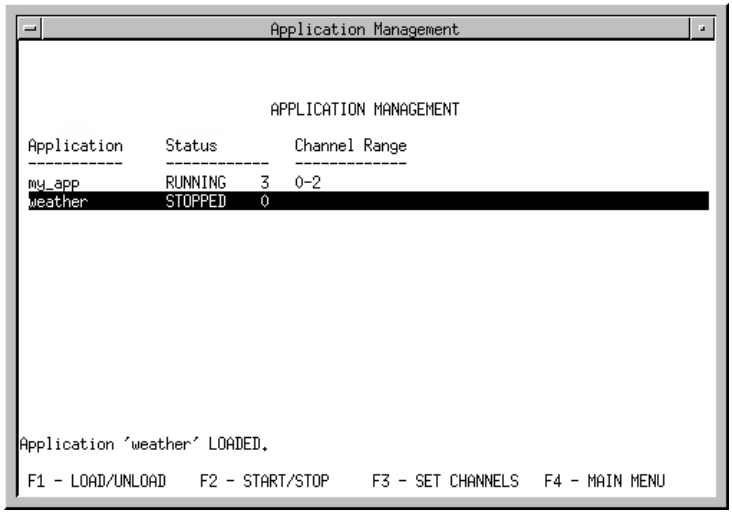
Changing applications on a set of channels

You can reassign a set of channels from one application to another without interrupting service. If you follow the procedures in this section, each channel can continue running an application until the current call is processed; then a different application is automatically run.

For example, assume that the application `my_app` is currently running on channels 0, 1, and 2, as shown in the screen below. If you decide to allow the `my_app` application to continue to run on channel 2 but would like channels 0 and 1 to begin running another application called "weather", then begin the applications on channels 0 and 1 and follow these steps.

1 Load the application "weather**"**.

The Application Management screen displays the following information.



2 Change the channel range for `my_app` as follows:

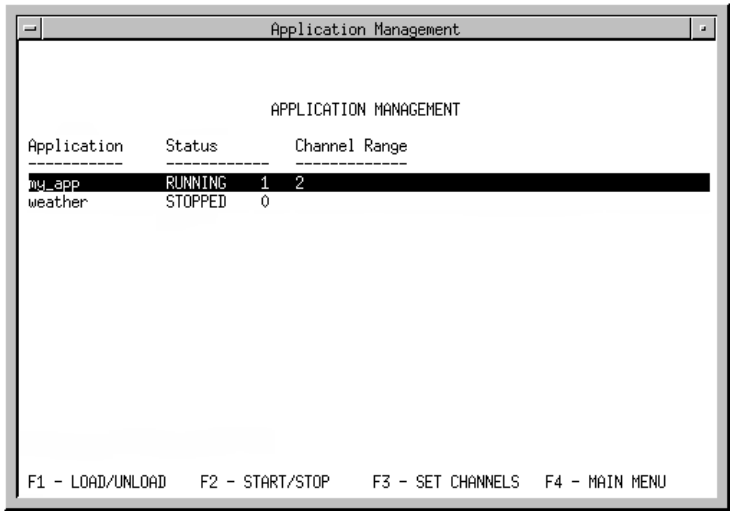
Move the cursor to highlight `my_app`, then press <F3> for "SET CHANNELS."

The following prompt is displayed:

```
Enter the Channel Range:
```

3 Type **2** and press <Enter>.

Notice that only channel 2 is still assigned to `my_app`.


Application Management
APPLICATION MANAGEMENT
Application Status Channel Range
my_app RUNNING 1 2
weather STOPPED 0
F1 - LOAD/UNLOAD F2 - START/STOP F3 - SET CHANNELS F4 - MAIN MENU

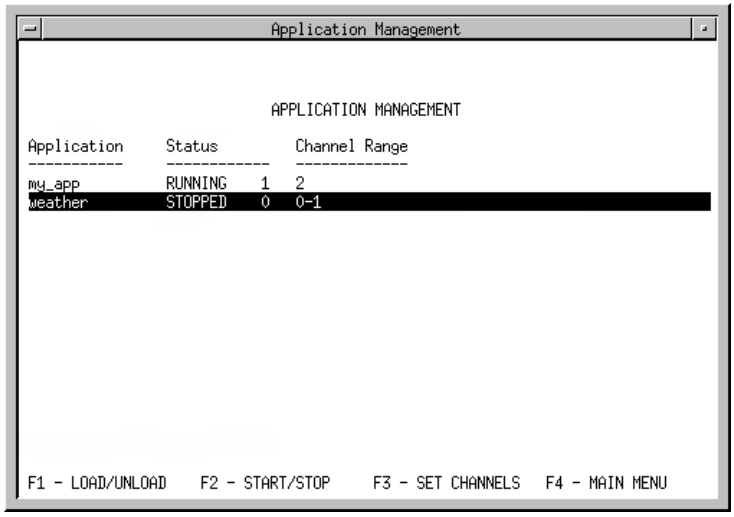
4 To assign channels 0 and 1 to the application “weather”, highlight `weather`, and then press <F3> for “SET CHANNELS.”

The following prompt is displayed:

```
Enter the Channel Range:
```

5 Type **0-1** and press <Enter>.

The system assigns channels 0 and 1 to the application “weather”, as shown in the following screen.


Application Management
APPLICATION MANAGEMENT
Application Status Channel Range
my_app RUNNING 1 2
weather STOPPED 0 0-1
F1 - LOAD/UNLOAD F2 - START/STOP F3 - SET CHANNELS F4 - MAIN MENU

Creating, editing, and running scripts

You can automate the process of loading and starting applications by using a script. A script is a list of instructions that indicates which applications to load, unload, start, or stop and which channels to assign. When you run a script, AP software automatically executes the instructions listed in the script.

To create a script, you can use either the `Write A Script` option on the `Application Management` main menu or a text editor (such as nedit). For instance, you can use the nedit text editor to create a script to load your application. Then create a script for unloading your application by copying the load-script file to another file name. Edit the script language to state the appropriate terminology for unloading the application. Similarly, you can create scripts for starting and stopping an application by simply editing the script language accordingly.

The Write A Script option allows you to take a snapshot of the current application configuration (that is, as displayed on the Application Management screen). In some cases, you may not want to include the current application configuration in your script. Rather than change the current setup, you can simply define a new set of application instructions by using a text editor, such as nedit, to create a script. Refer to"Editing a script" on page 3-24.

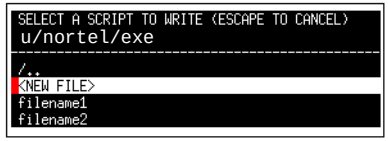
> ***Note:*** In order to use a script, its name must include the .sai extension, and the file must be located in the directory exe. Refer to "Choosing and using directories" on page 3-10 for additional information.

Creating a script

To create a script that is a snapshot of the current application configuration, follow these steps.

1. Stop and unload any active applications you do not want included in your script.
2. Load the applications you want to include in the script and assign the channels. Then, start the applications.
3. From the Application Management menu, select the Write a Script option.

   The SELECT A SCRIPT TO WRITE pop-up menu is displayed.



   You can use this menu to navigate through directories and subdirectories, list scripts available in the current directory, or create a new script.

/u/nortel/exe	Displays the name of the current directory.
/.	Changes the directory to the parent directory.

<NEW FILE>	Creates a new script by taking a snapshot of the current application configuration (that is, as displayed on the `Application Management` screen), and allows you to name the script.
/subdirectory1 /subdirectory2	Changes the current directory to the specified subdirectory.
filename1 filename2	Lists the names of existing scripts in the current directory.

4 Select the "`NEW FILE` option from the menu to create a new script in the current directory.

The following prompt is displayed:

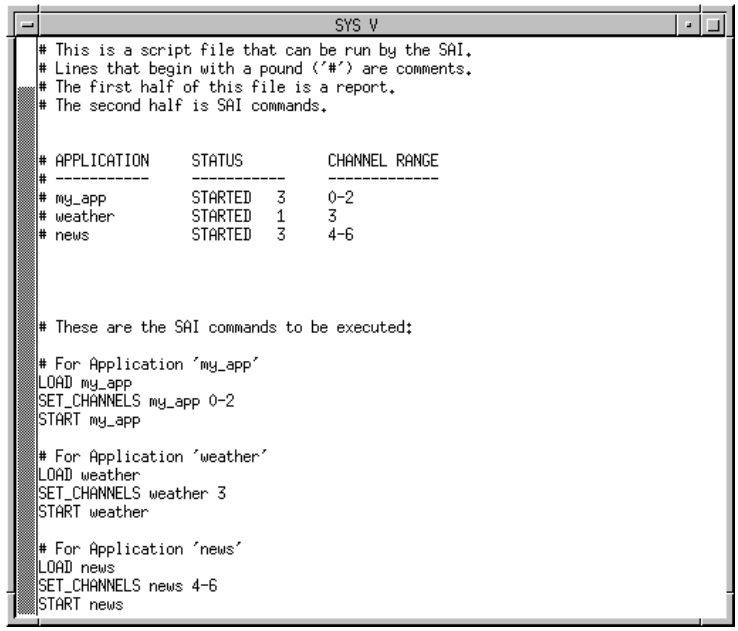
```
Write Script As: Untitled
```

5 `Untitled` is the default script name. To save the script under a different name, type a name up to 10 characters in length, then press <Enter>.

The Administration Interface creates the script, then redisplays the `Administration Interface` main menu.

Note: Using the `Write A Script` option creates a script that reflects the current Application Management assignments. If you want your script to unload an application, you must edit the script file using a text editor (such as nedit) and add an UNLOAD instruction. See "Editing a script" in this chapter for additional information.

The following screen shows a script called `news.sai`, which was created using the `Write a Script` option. Notice that the Administration Interface automatically writes a script that includes comments and a report, along with commands for loading applications, assigning channels, and starting applications.


SYS V
This is a script file that can be run by the SAI.
Lines that begin with a pound ('#') are comments.
The first half of this file is a report.
The second half is SAI commands.
APPLICATION STATUS CHANNEL RANGE
---------- ---------- -------------
my_app STARTED 3 0-2
weather STARTED 1 3
news STARTED 3 4-6
These are the SAI commands to be executed:
For Application 'my_app'
LOAD my_app
SET_CHANNELS my_app 0-2
START my_app
For Application 'weather'
LOAD weather
SET_CHANNELS weather 3
START weather
For Application 'news'
LOAD news
SET_CHANNELS news 4-6
START news

When `news.sai` is run, the script performs the following actions.

1 Loads the `my_app` application, assigns channels 0, 1, and 2 to the application, and then starts the application.

2 Loads the "weather" application, assigns channel 3 to the application, and then starts the application.

3 Loads the "news" application, assigns channels 4, 5, and 6 to the application, and then starts the application.

Note: Running the `news.sai` script does not affect any other applications that are currently running.

Editing a script

You can use any available text editor on the application server (such as nedit) to edit an existing script or to create a new script without disrupting the current application configuration. Follow these steps.

1 If necessary, change (cd) to the directory where you want to create or edit the script. The script must be stored in the directory `exe` of AP software before you can run it.

2 Use a text editor to create a new file or to open an existing file for editing. Note that all script file names are identified by the `.sai` extension and can contain up to 10 characters, excluding the `.sai` extension.

3 You can include any of the commands in Table 3-3 by substituting the names of your applications and channel ranges.

Table 3-3: Application and script commands

Command and syntax	Function
LOAD *application_name*	Loads an application on an MRS.
UNLOAD *application_name*	Unloads an application from an MRS.
SET_CHANNELS *application_name channel_range*	Assigns one or more channels to an application. Separate the numbers in the channel range with a comma or hyphen with no spaces (for example: 1,7-9).
START *application_name*	Starts an application on all assigned channels.
STOP *application_name*	Gracefully stops an application.
FSTOP *application_name*	Forcefully stops an application.
RUN *file_name*	Executes a script named *file_name*.
WRITE *file_name*	Creates a script for applications that are loaded with the script files.

4 To add comment lines, begin the line with the pound (#) character. You can also insert blank lines.

Note: Blank lines and comments are ignored by the Administration tools when running a script.

5 Save the file, and exit from the editor.

For example, follow these steps to create a script called `PriceSwap.sai`:

a Stop the application `Prices`.

b Unload the application `Prices`.

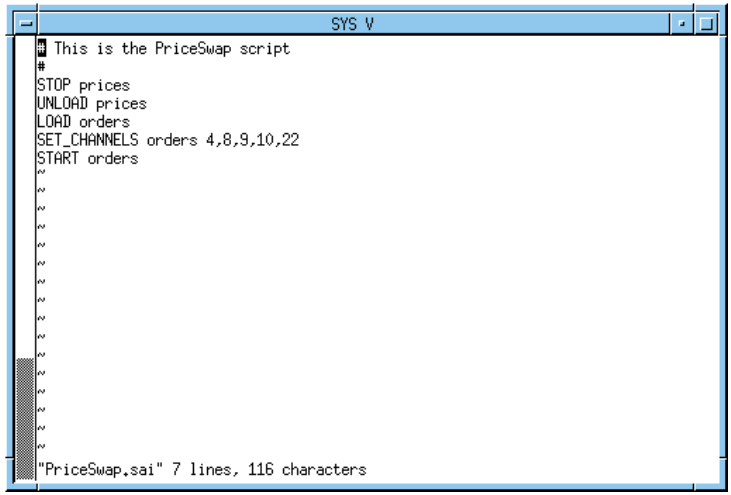
c Load the application `Orders`.

d Assign channels 4, 8, 9, 10, and 22 to the application `Orders`.

e Start the application `Orders` on the specified channels.

Figure 3-1 illustrates the script `PriceSwap.sai`.

Figure 3-1: PriceSwap.sai script



Use a text editor to write scripts whenever possible. If you use the `Write a Script` option, you cannot write scripts that load applications on channels currently in use. For example, if you want to write a script that stops and unloads the application running on channel 1 and then loads and starts a different application on channel 1, you must create the script using a text editor.

In addition, if you want to create a script that unloads all your applications, it is much quicker to create the script in a text editor and copy the commands rather than using the `Application Management` screens to set the channels, stop, and unload each application.

Running a script

Once created, you can run the script at any time, by following these steps.

1 From the Application Management window, select the `Run a Script` option.

The `Select a Script to Run` pop-up menu is displayed.

2 Change to the directory `exe` where you saved your script; then select the file name from the menu.

The Application Management interface executes the script and then displays the Application Management main menu. The `Application Management` screen reflects the changes made by your script.

Note: You can also initiate a script using the SASE tool. See the description in Chapter 9, “Tools,” in this guide for information on the SASE tool.

Creating a reboot.sai script

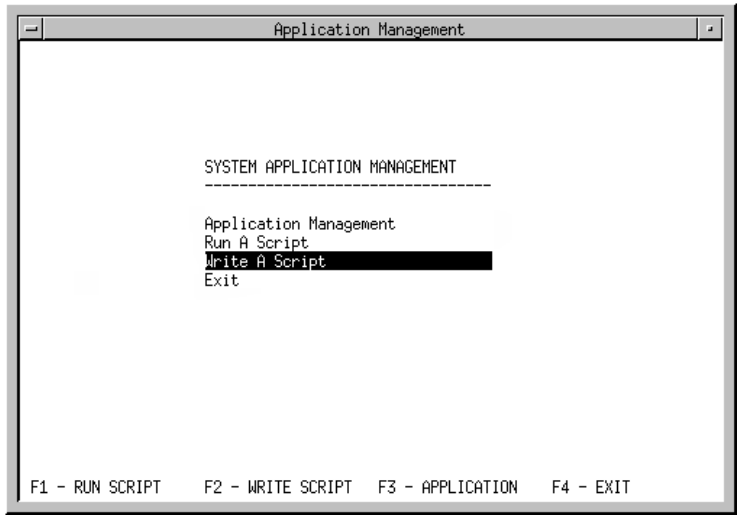
Once you establish a stable application environment, save the status of your applications as a reboot script named `reboot.sai` so that they can be automatically restarted after a power outage or whenever AP software is reset.

To set up a reboot script, follow these steps.

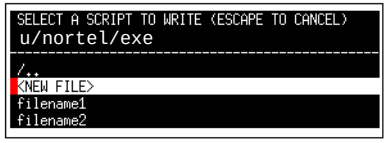
1 Load and start all applications whose status you want to back up with the reboot script.

2 Access the `Application Management` main screen.

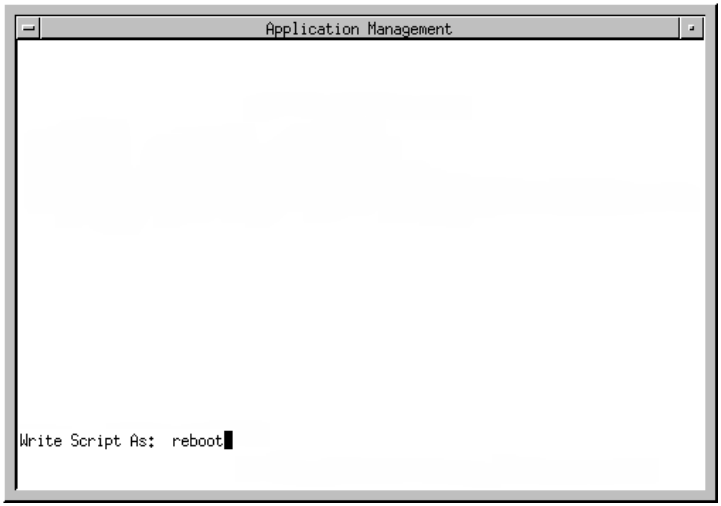
3 From the main `Application Management` screen, select `Write A Script` or press <F2> for "WRITE SCRIPT."



4 From the `SELECT A SCRIPT TO WRITE` pop-up menu, select "<NEW FILE>".



A screen is displayed with the message `Write Script As:` as shown below.



5 Type **reboot** after `Write Script As:`, then Press <Enter>.

A file called `reboot` is created in the directory `exe`.

Stopping an application

You can stop an application at any time by selecting one of the following options:

- `STOP GRACEFULLY`, which allows the application to complete its current calls while preventing the application from accepting any new calls.
- `STOP FORCEFULLY`, which stops the application forcefully without allowing the application to complete its current calls. Note that the application does not process the cleanup handler.

CAUTION

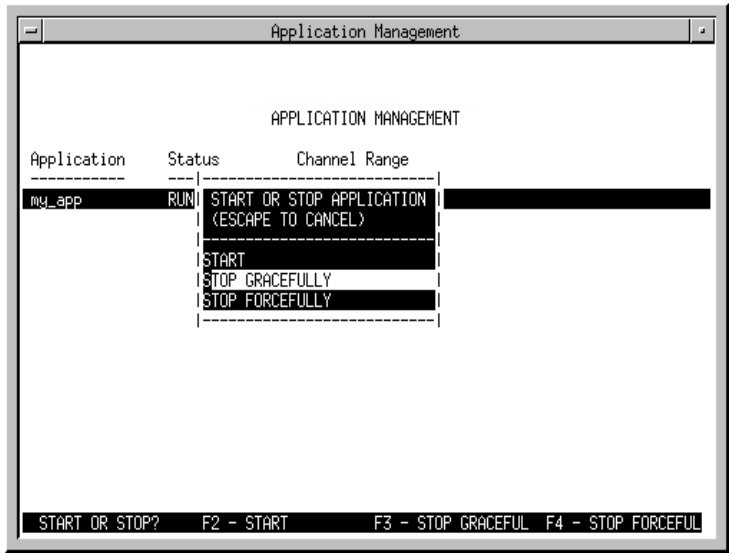
Risk of service interruption

Use the `Stop Forcefully` option with caution. Stopping forcefully causes the application to hang up on any callers using it.

To stop an application, follow these steps.

1 From the Application Management window, press <F3> for "Application," or move the cursor to "Application Management" and press <Enter>.

2 Move the cursor to highlight the name of the application you want to stop, then press <F2> to display the START OR STOP APPLICATION pop-up menu.



3 Move the cursor and highlight STOP GRACEFULLY or STOP FORCEFULLY and press <Enter>. (Or, press <F3> for STOP GRACEFULLY; or <F4> for STOP FORCEFULLY.

Note: If you select STOP GRACEFULLY for the application my_app, the application allows its current calls to end normally and then stops. The status of the application changes from "RUNNING" to "STOPPING," with the number following the status reflecting the number of channels still running the application. This number decrements on the screen as each channel ends the current call. When the number reaches 0, the status is changed from "STOPPING" to "STOPPED."

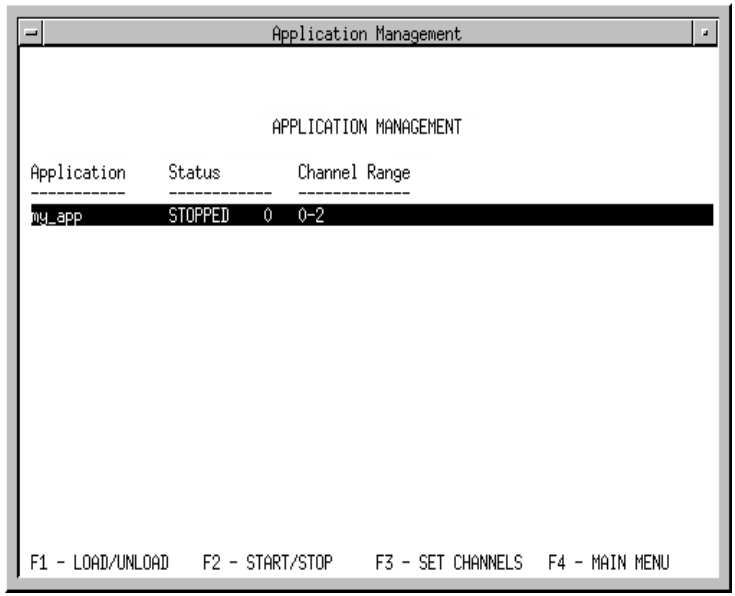
Example:

```
Application my_app STOPPED on 3 Channels (STOP
Completed).
```

If you choose `STOP FORCEFULLY`, the application stops immediately and the following message is displayed:

```
Application my_app forcefully STOPPED on 3
Channels.
```

In either case, the message lists the number of channels on which you stopped the application. Also note that in the Status column, the status of the application changes from STARTED to STOPPED, and the status now reflects that 0 channels are running applications.



Unloading an application

To unload a stopped application, follow these steps.

1 From the Application Management window, press <F3> for “Set Channels.”

2 Press <Enter> in response to the following prompt:

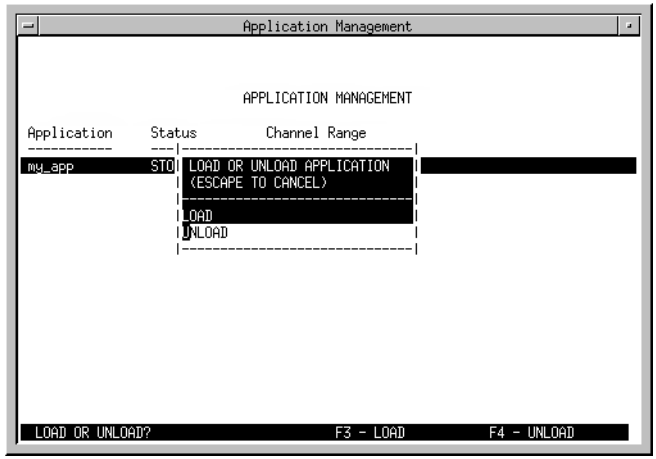
```
Enter The Channel Range:
```

Note: If you press <Enter> and do not enter any channel number(s), you remove any existing channel assignments.

The information on the screen indicates that there are no longer any channels assigned to the application.

3 Press <F1> for “Load/Unload.”

The LOAD OR UNLOAD APPLICATION pop-up menu is shown.



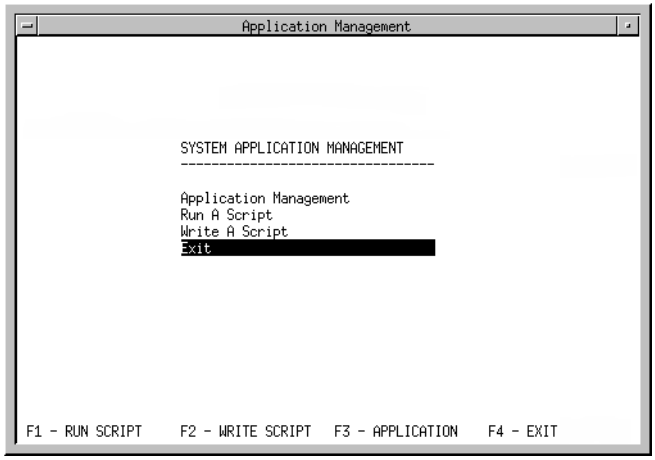
4 Press <F4> for “UNLOAD” or move the cursor to highlight “UNLOAD” and press <Enter>.

The `Application Management` screen is redisplayed without the application included in the list; the application is unloaded.

Exiting from Application Management

To exit from the `Application Management` screen, follow this step.

1 From the main Application Management window, select `Exit`.



The Application Management window is closed.

Exiting from the OPEN IVR Control Panel

To exit from the OPEN IVR Control Panel, follow these steps.

1 Move the cursor to the Control Panel.

2 Click MB1 on the Administration button and select `Exit` from the menu.

3 Confirm that you want to exit.

The Control Panel closes and disappears from the desktop.

Maintaining security

OPEN IVR and all applications run in the background. To maintain security within your OPEN IVR system, log out of the AP software account to prevent anyone from making changes.

Logging out

To log out, follow these steps.

1. Click on the desktop background with MB1 and select `Exit` from the menu.

   The system returns you to the login window for your platform. However, applications can continue to run after you close the window environment.

2. Alternatively, you can lock the screen from the `Administration tools` menu on the OPEN IVR Control Panel.

Chapter 4: Managing prompts on the MRS

This chapter explains the methods and sound equipment used to record and say the prompts used by your applications.

Prompts are the recordings that OPEN IVR uses to guide callers through your applications. You load these prompts on the MRS. When a caller contacts the system, your application might play a prompt like: “Thank you for calling XYZ Corporation.” The Prompt Loading Facility (PLF) is your tool for playing, recording, deleting, backing up, or restoring and managing prompts.

ATTENTION

The Prompt Loading Facility (PLF) is designed for use with prompts only. It is not designed for playing or moving messages.

For each activity you want to perform, you must follow the series of procedures listed below. These procedures vary depending on the activity you want to perform.

> ***Note:*** This chapter assumes that you have configured your system, which includes assigning ranges for your system prompts and local prompts. If you plan to use foreign language prompts, refer to the LANG and PDAT cells in the *Symposium OPEN IVR Cell Catalog.*

The following section describes the tasks you can perform using the Prompt Loading Facility and the procedures you must follow to perform each task. Detailed instructions for these procedures appear later in this chapter.

Playing existing prompts for review

To play existing prompts for review, use the following checklist.

Procedure/Section	Completed
“Choosing prompt numbers” on page 4-4	
“Selecting a trunk” on page 4-11	
“Installing sound equipment” on page 4-15	
“Accessing the Prompt Loading Facility (PLF)” on page 4-17	
“Select PLF Channel screen” on page 4-19	
“Playing prompts” on page 4-22	
“Exiting from the Prompt Loading Facility” on page 4-61	

Recording and loading new prompts onto the MRS

You can load your prompts directly or remotely on to the MRS. Use the following checklist.

Procedure/Section	Completed
“Choosing prompt numbers” on page 4-4	
“Choosing a recording method” on page 4-6	
“Selecting a trunk” on page 4-11	
“Installing sound equipment” on page 4-15	
“Accessing the Prompt Loading Facility (PLF)” on page 4-17	
“Select PLF Channel screen” on page 4-19	
“Recording temporary prompts” on page 4-25	
“Reviewing and installing temporary prompts” on page 4-49	
“Exiting from the Prompt Loading Facility” on page 4-61	

Deleting prompts from the MRS

Because of limited storage space on your MRS, you should delete any prompts that you no longer need.

To delete specific prompts, use the following checklist.

Procedure/Section	Completed
“Choosing prompt numbers” on page 4-4	
“Selecting a trunk” on page 4-11	
“Accessing the Prompt Loading Facility (PLF)” on page 4-17	
“Select PLF Channel screen” on page 4-19	
“Deleting prompts” on page 4-53	
“Exiting from the Prompt Loading Facility” on page 4-61	

Backing up and restoring prompts

You should back up your application-specific prompts after you have finished recording them. You can then restore, if needed, any prompts you have recorded for your application.

To back up and restore specific prompts, use the following checklist.

Procedure	Completed
“Choosing prompt numbers” on page 4-4	
“Accessing the Prompt Loading Facility (PLF)” on page 4-17	
“Backing up and restoring prompts” on page 4-55	
“Exiting from the Prompt Loading Facility” on page 4-61	

Choosing prompt numbers

Before you record prompts, you must determine what application-specific prompts and what standard AP software prompts you will need for your particular application. When you configure the AP, you set aside ranges of prompt numbers for the kinds of prompts you are going to use. You can assign any set of numbers to this range. The range is called an offset. The most common prompts are system-wide prompts and local prompts:

- A system-wide prompt is available to each MRS that is attached to the AP.
- A local prompt is restricted for use only by the MRS it is recorded on.

When you record a prompt, if you assign it a prompt number within the range of local prompts, then that prompt automatically becomes a local prompt. The system stores it only on the MRS that recorded it. But if you assign a number to a newly recorded prompt from the range of system-wide prompts, it automatically becomes a system-wide prompt and is distributed to all the MRSs controlled by the AP once the prompt is installed.

If you do not recall the ranges you assigned for system-wide and local prompts, you can find information by invoking the System Configuration Manager from the OPEN IVR Control Panel's System Administration icon. The information is found in the `Node Configuration` screen.

Standard prompts

Standard prompts are those likely to be useful in any application: prompts such as numbers, days of the week, “Hello,” and “Please enter your password.” A list of the standard system prompts provided with Symposium OPEN IVR appears in Appendix A. The standard prompts are prerecorded and provided with the MRS; they have already been loaded as system-wide prompts. Some of the cell types in AP software (PDAT, for example) require the use of standard prompts; be careful not to delete or change them unintentionally. You may replace them with your own voice, but ensure that the wording matches the original.

CAUTION

Risk of data loss

When you want to record or delete prompts, do not select prompt numbers lower than 500. Standard system prompts for AP software are in the range 0 to 499. You can decide to add to the application prompts, starting at 500.

The standard prompt range will be multiplied for each language you wish to support. Before setting application prompt ranges, be sure you know how many languages your system is supporting to ensure you do not overwrite the additional system prompts. Refer to the description of the LANG cell in the *Symposium OPEN IVR 4.0 Cell Catalog*.

Application-specific prompts

When developing a new application, you may require some prompts other than the standard prompts. This means that some additional prompts will have to be recorded. You should set aside a range of prompt numbers for the application prompts. By assigning a range rather than just a few individual numbers, you can be sure that the application developer will have as many consecutive prompt numbers as necessary for each application. In addition, it is easier for you to keep track of which prompts belong to which application if you assign a range for each.

> ***Note:*** All voice recordings in OPEN IVR are prompts or messages. Message numbers begin where prompt numbers end. Do not use message numbers when working with the Prompt Loading Facility, as it is designed for managing prompts only.

Choosing a recording method

You can record your prompts either directly onto the MRS using a telephone or transfer prompts from audio tape. Your recording method is linked with your choice of sound quality. The following charts compare the advantages and disadvantages of the different kinds of sound equipment you can use to record the prompts.

Telephone

Advantages	Quick and easy. Uses existing equipment. Normally used during application development, although another method produces better sound quality for production.
Disadvantages	Does not provide the best sound quality.

Telephone + (an acoustic coupler or audio conversion software package for the MRS/AP, MRS/Rack, or MRS/Tower)

Advantages	Quick and easy. Provides better sound quality than just using a telephone.
Disadvantages	Does not provide the best sound quality. Requires equipment you may not have on hand.

Microphone + Mixer (+ an acoustic coupler or audio conversion software package for the MRS/AP, MRS/Rack, or MRS/Tower)

Advantages	Quick and easy. Provides better sound quality than recording with a telephone.
Disadvantages	Does not provide the best sound quality. Requires equipment you may not have on hand.

Tape + Mixer (+ an acoustic coupler or audio conversion software package for the MRS/AP, MRS/Tower, or MRS/Rack)

Advantages	Provides the best sound quality, especially if tape is recorded in a recording studio with a professional announcer. Allows you to record prompts in a studio or any other location where no MRS is present. Allows you to create a collection of prompts for loading onto more than one MRS or more than one type of MRS.
Disadvantages	Not as easy as recording directly onto the MRS with a telephone or microphone. Requires equipment that you may not have on hand.

Three recording options

You have a choice of three options for recording your prompts:

- recording individual prompts
- recording a list of prompts
- recording prompts with DTMF prompt numbers

Recording prompts directly onto the MRS provides you with the flexibility to immediately add and change them. Recording prompts onto tape first provides better sound quality but less flexibility in making changes.

You can record your prompts with DTMF prompt numbers to take advantage of the DTMF detection feature of the Prompt Loading Facility. By using this technique (whether you record directly onto the MRS or to tape), you can load prompts remotely or automatically from tape; this is particularly useful when you are off-site or away from the AP. This section discusses each of these methods.

Recording individual prompts

You can record prompts directly onto the MRS without prerecording the prompts on tape. Use one of the following methods to create DTMF digits to separate the prompts and to signal the beginning and end of each prompt:

- Press the keys on the telephone.
- Use an acoustic coupler or audio conversion software package.

Table 4-1 lists the equipment needed for each type of MRS.

Table 4-1: Equipment for recording prompts onto an MRS

MRS	Equipment
MRS/AP MRS/Tower MRS/Rack	A remote telephone, or a telephone and acoustic coupler

Recording a list of prompts

You can prerecord several prompts onto a tape and then load the completed recording onto the MRS. The recording must have start-of-recording and end-of-recording DTMF tones coded onto the tape. You can use an acoustic coupler to supply DTMF tones. Table 4-2 lists the equipment needed for each type of MRS.

Table 4-2: Equipment for recording prompts on tape

MRS	Equipment	Optional equipment
MRS/AP MRS/Tower MRS/Rack	A tape deck, a mixer, an acoustic coupler, a microphone, earphones, a compression amplifier, a noise gate, and a sibilance controller	An equalizer is recommended. If you are recording reel-to-reel, you may also want a cassette tape recorder.

Recording with DTMF prompt numbers

This recording procedure is useful when you are loading prompts and you are off-site or away from the AP or are automatically recording a list of prompts from a cassette. You prerecord prompts onto a tape and then load the completed recording onto the MRS or use a telephone to record directly onto the MRS. The recording must have prompt numbers, start-of-prompt tones, end-of-prompt tones, and other control tones coded onto the tape with DTMF tones. To supply DTMF tones, use an acoustic coupler, or, if you are recording directly with a telephone, you can press keys on the telephone. Table 4-3 lists the equipment needed for each type of MRS.

> ***Note:*** This method is recommended if you want to record high-quality prompts and enable access to an acoustic coupler and equipment to supply DTMF tones. Recording DTMF tones with certain noise suppression can distort and prevent detection of DTMF tones during recording.

Table 4-3: Equipment for recording with DTMF prompt numbers on tape

MRS	Equipment	Optional equipment
MRS/AP MRS/Tower MRS/Rack	A tape deck, a mixer, an acoustic coupler, a microphone, earphones, a compression amplifier, a noise gate, and a sibilance controller	An equalizer If you are recording reel-to-reel, you may also want a cassette tape recorder. An AC-200 can be used to supply DTMF.

Selecting a trunk

The PLF must have access to one of the MRS trunks in order to play, record, or delete prompts. In this procedure, you decide which trunk you want the Prompt Manager to use. In a later procedure, you notify the Prompt Manager about the trunk you have chosen.

CAUTION

Risk of service disruption

When you choose a trunk for the Prompt Loading Facility to use, select a trunk that is not assigned to an application or you may disrupt service to people who are using the application. Do not use a channel selected in the XPM.

If you are not sure which trunks are assigned to applications, check the `Application Management` screen. To access the `Application Management` screen, follow this step.

1 From the OPEN IVR Control Panel, click the System Administration icon and select `Application Management` from the menu.

The `Application Management` screen lists the channels assigned to applications.

Note: You must have a free channel to use the PLF facility. If all channels are assigned, reassign a channel to the PLF.

When you choose a trunk, consider the configuration types of your trunks. If you are not sure how a particular trunk is configured, you can check the `Trunk Configuration` screen. Only Loopstart analog trunks can utilize the PLF with an acoustic coupler.

Checking trunk configuration

1 From the OPEN IVR Control Panel, click the System Administration icon and select `System Configuration` from the menu.

The `Node Configuration` screen appears.

2 In the `Node Configuration` screen, press <F2> for “Go to Trunk.”

The `Trunk Configuration` screen appears.

3 Enter the trunk number for the trunk whose configuration you are checking.

4 Press <Enter>.

The `Trunk Configuration` screen appears for the trunk number you specified.

Rules for selecting a trunk on an MRS

Whether you intend to record, play, or delete prompts, follow these rules for selecting a trunk:

- Choose a trunk that is not currently assigned to an application, or reassign trunks temporarily for the PLF facility.
- Choose an input analog trunk.
- If you plan to dial in to the system to record or play prompts, choose a loopstart input channel.

Sound equipment overview

Before installing the sound equipment, you should be familiar with a few basic recording concepts. This section briefly describes techniques you may find useful.

Practise recordings

When you record prompts, it is important to record and load just a few prompts at first to see the results. You may find it necessary to adjust your equipment or change your recording techniques for better sound quality. Turn off air conditioners or any other equipment that may create low-level noise when recording via the telephone or a microphone.

To maintain a consistent recording level, play back a satisfactory prompt and set your sound recording levels correspondingly. To further ensure consistency, record a new prompt, play it back, and listen to the two prompts to validate the sound level.

Stereo cable

The stereo cable must have a 1/4-inch stereo plug on one end and two RCA type phone jacks on the other end. Of the two phone jacks, only one jack is active.

Tape deck

You should make your recordings on a reel-to-reel tape and then copy the recording onto cassette. Reel-to-reel recording produces the best sound quality and is easier to edit. Cassette tape provides easier loading onto the MRS.

Tips on recording reel-to-reel

When recording reel-to-reel, record at the same decibel level of your cassette. For instance, you want the peaks of your signal to be no more than +3 dB, with an average level of 0 VU. Use a peak reading meter, not a VU meter, and ride the maximum levels as close to +3 dB as possible without going over. Do this with the fader on your console, not with your compressor. Levels should vary between –3 and +3 dB.

Good recording techniques involve knowing your voice talent well enough to anticipate loud peaks so you can compensate with the fader.

When recording to two-track, use noise reduction (dbx Type I, Dolby SR) on a digital tape deck. Be sure to record some room noise to edit in later in place of noise between words and prompts. Do not use blank tape or leader for this purpose.

Tips on copying a reel-to-reel recording to cassette

To copy a two-track recording to cassette, patch the two-track recording through a console to the cassette deck. You may try adjusting the EQ again, if necessary. Once again, adjust the levels to the cassette deck to fine-tune your recording.

Use Dolby C noise reduction on your cassette deck. It has superior high-frequency response to Dolby B.

Also make sure your cassette deck is properly biased for the tape you use (TDK SA for Nakamichi decks), and consult your owner's manual. Make sure the Dolby in your deck is tracking properly. (Many decks come out of the dealer's shop with misaligned bias and Dolby circuits.) If you hear a reduction in high frequency on playback, the Dolby is not tracking properly.

Microphone

Use a high-quality condenser microphone with low-frequency roll-off, such as one of the following examples:

- Nakamichi CM-100, or 300 with cardioid capsule
- Shure SM81 with cardioid
- Schoeps CMC5-V with cut 1 filter and cardioid capsule
- AKG 414 in cardioid position

Place the microphone in a horizontal position about 6 to 8 inches from the announcer's mouth. Use a windscreen to avoid pops.

> ***Note:*** You should always filter out low-frequency energy at the microphone. If you do not filter out low-frequency energy before processing, the MRS tries to record it. The MRS makes a digital recording, and there is a limit on the number of bits and samples. The phone lines have a frequency response of 300 Hz to 3 400 Hz, so there is no point in trying to record low-frequency energy. Recording with low-frequency energy degrades the signal.

Noise gate

Use a noise gate to reduce room noise and breathing noises. Four to five dB of gating is sufficient. Use a gate with a variable attack and release.

Sibilance controller

If necessary, use a de-esser (sibilance controller) to reduce sibilance.

Compression amplifier

Use a reliable compressor to compress audio slightly, 2–3 dB of compression, to round off the peaks.

> ***Note:*** The phone company uses compression in its equipment. Be sure to use very little compression in your recording, or the levels will be reduced, which adds distortion to the sound.

Equalizer

If your console has a good equalizer section, you may try rolling off a little more low end and boosting slightly at 3.7 kHz to compensate for phone line frequency response (+3 dB). This may seem like a contradiction, but it works. Even though the phone lines have a limited response, you boost a fairly wide band of frequencies. It is sufficient to compensate for the phone line roll-off.

Installing sound equipment

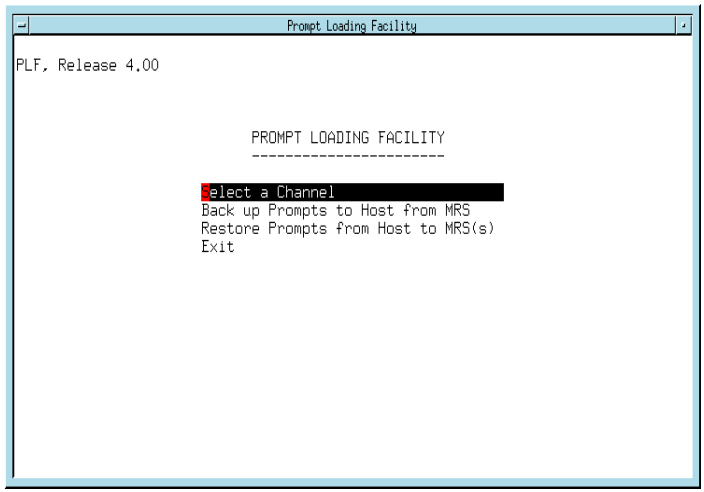
The vendor documentation shipped with an acoustic coupler provides information on installing sound equipment. Refer to the vendor documentation for information on how to record prompts on your system.

Prompt Loading Facility screen

The Prompt Loading Facility screen is used to select a channel in order to

- play and listen to prompts
- record prompts and DTMF prompts onto the MRS or tape
- review and install temporary prompts
- delete prompts
- back up and restore prompts from the AP to the MRS

Figure 4-1: Prompt Loading Facility screen

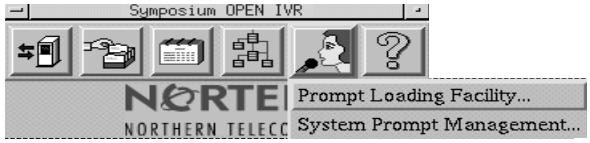


Accessing the Prompt Loading Facility (PLF)

Before you use the Prompt Loading Facility, AP software must be running, and the MRS that you will use to record the prompts must have completed its diagnostics.

To access the Prompt Loading Facility, follow these steps.

1 From the OPEN IVR Control Panel, click the Prompt Manager button and select `Prompt Loading Facility.`



An alternative to starting the Prompt Loading Facility from the Control Panel is to start it from the system shell. To do this, change the current directory to `exe` in the base directory of AP software.

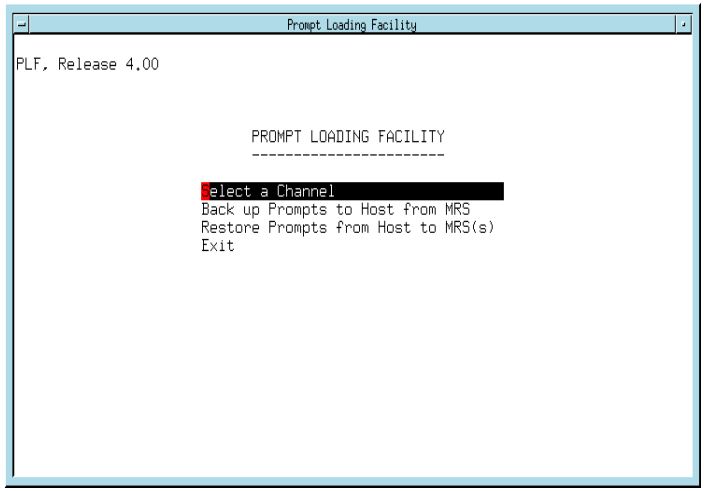
If you are in an X environment, type the following command at the shell prompt, and press <Enter>:

`plf_start`

If you are not in an X environment, type the following command at the shell prompt, and press <Enter>:

`plf`

Whether you access the Prompt Loading Facility from the Control Panel or the shell prompt, AP software displays the `Prompt Loading Facility` main menu.

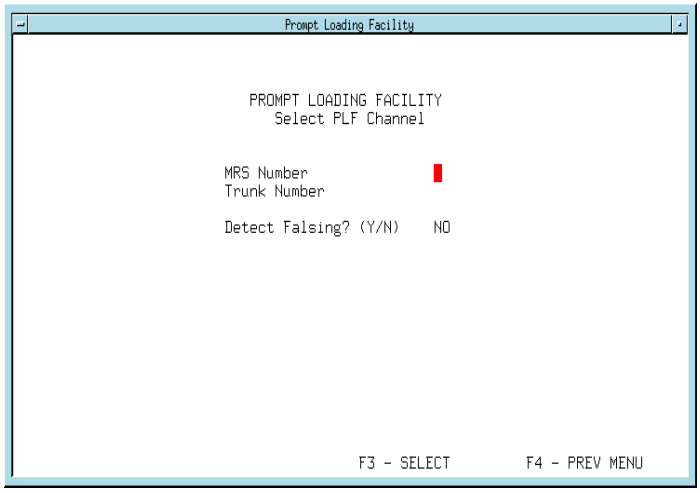


2 Move the cursor to the item you want to select, and press <Enter>.

Select PLF Channel screen

This screen allows you to select a channel to be used by the Prompt Loading Facility.

Figure 4-2: Select PLF Channel screen



The screen contains the following fields:

MRS Number Indicates the number of the MRS that contains the trunk you want the Prompt Loading Facility to use. The MRS numbers begin with 1.

Trunk Number Indicates the number of the trunk that you want the Prompt Loading Facility to use.

Detect Falsing? Indicates whether you want the system to detect falsing when the MRS plays back a prompt. Falsing is a term that describes the condition when certain frequencies in a voice recording are incorrectly interpreted as DTMF tones. In some applications, false DTMF tones may cause the system to perform unwanted activities, such as selecting menu choices on its own, terminating playback, or hanging up prematurely.

If you set this field to YES and the system detects falsing in a prompt, you see an error message on the screen when you play back the temporary prompt before installing it or when you play it back after you install it. You should rerecord any prompt that contains false DTMF tones.

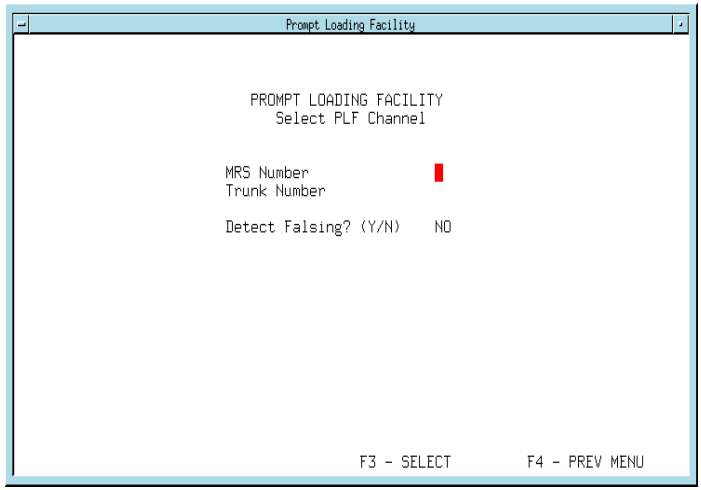
False DTMF tones occur naturally in some voices. You should always select YES to use the falsing detection feature to test the voice of anyone who may record prompts.

Selecting a channel

To select a channel, you must notify the Prompt Loading Facility about the trunk you have chosen and provide related information. You must have completed the procedure called “Selecting a trunk” on page 4-11 before selecting a channel.

1 Choose `Select a Channel` from the `Prompt Loading Facility` main menu.

The `Select PLF Channel` screen is displayed.



2 Enter the trunk number of the MRS selected rather than the channel number.

If you are not sure of how the trunk numbers compare to the channel numbers, refer to the *Symposium OPEN IVR 4.0 Error Messages Guide*. Trunk and channel numbers begin with 0.

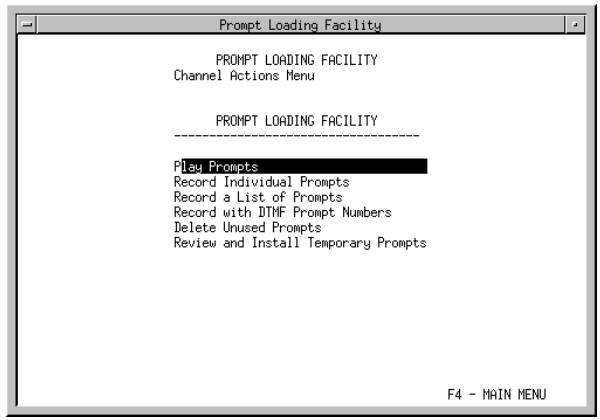
3 Enter the number of the channel that you plan to use for recording on the `Prompt Loading Facility` screen.

4 Enter the number of the MRS where the channel is located. If necessary, change the default selection in the *Recording Jack*, *Detect Falsing*, and *Silence Discrimination* fields. When you finish, press <F3> for `Select`.

The following message appears on the screen for a few moments:

`Initializing the channel`

After the system initializes the channel, the message disappears and the `Channel Actions` screen appears. The LED on the MRS channel is extinguished.



5 If you use a telephone to listen to prompts or to record prompts, make a telephone call to the channel you selected for the Prompt Loading Facility to use.

If you connect directly into a trunk configured as analog DID, you must dial digits to reach the channel. It does not matter which digits you dial; you only need to dial the number of digits that the channel is configured to receive. (Check the "# of digits" parameter on the `Trunk Configuration` screen to see how many digits to dial.)

6 Leave the telephone off-hook until you are ready to exit the Prompt Loading Facility.

Playing prompts

Before you attempt to play prompts, complete the following checklist.

Procedure/Section	Completed
"Choosing prompt numbers" on page 4-4	
"Selecting a trunk" on page 4-11	
"Installing sound equipment" on page 4-15	
"Accessing the Prompt Loading Facility (PLF)" on page 4-17	
"Select PLF Channel screen" on page 4-19	

Listening to existing prompts

This procedure allows you to listen to existing prompts. The Prompt Loading Facility must be open to the `Channel Actions` screen.

To listen to existing prompts, follow these steps.

1 Select `Play Prompts` from the `Channel Actions` screen.

The system displays the `Play a list of prompts` screen.

2 Enter the numbers of the prompts you want to play. You can use dashes and commas to indicate more than one prompt.

For example, to play prompts 13, 15, 20, 21, and 22, type 13,15,20-22 without spaces, then press <F3> for “Play” to play the prompts.

The prompts are played in order. As you play each prompt, you see the following messages on the screen:

```
Now playing prompt n.
Abort stops this prompt.
Quit stops playing prompts.
```

If the system detects falsing during playback and the falsing option is set for `yes`, the following message appears, where *n* is the number of the prompt:

```
Warning: Prompt n false digits.
```

To interrupt the current prompt and continue with the next prompt in the list, press <F3> for “Abort.”

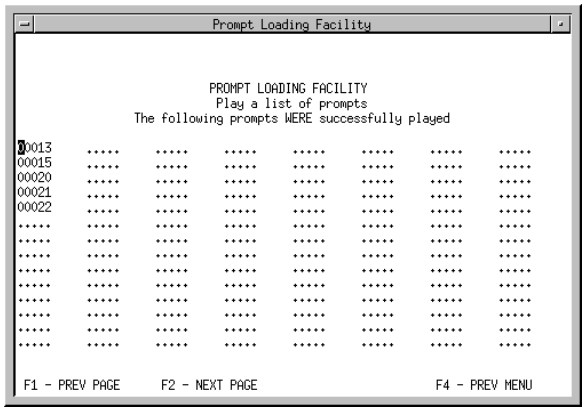
To stop all prompts, press <F4> for “Quit.”

3 When you finish playing, check to see which prompts played successfully and which ones did not.

4 Press <F2> to go to the next screen.

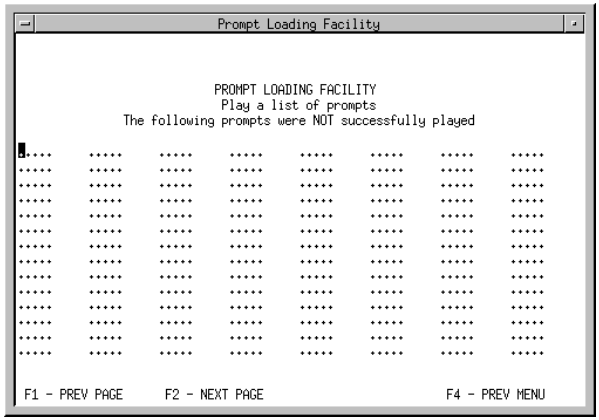
The `Play a List of Prompts` screen appears.

Note: This screen can list a maximum of 112 prompts. You cannot play more than 112 prompts at a time.



5 Press <F2> to continue to the next page.

This page lists the prompts that did not play successfully.


Prompt Loading Facility
PROMPT LOADING FACILITY
Play a list of prompts
The following prompts were NOT successfully played
F1 - PREV PAGE
F2 - NEXT PAGE
F4 - PREV MENU

6 Repeat steps 2, 3, and 4 to listen to more prompts. Press <F4> to return to the `Channel Actions` screen.

Recording temporary prompts

This section describes how to load prompts onto the MRS. Note that these procedures create only temporary prompts. In a later section of this chapter, you learn how to install the temporary prompts to make them available for application use.

CAUTION

Risk of data loss

Do not record more than 112 prompts in one session without installing them in between sessions, or an error will occur and all prompts will be lost.

If the PLF encounters more than 112 errors during restore or backup, it will stop the backup or restore process.

You can record a new, temporary version of a prompt that is already in use by an application. When you install the new version, it automatically replaces the old version. It is important to note that even though you have recorded a new version of a prompt, the old version is still available for application use until you install the new one.

Before recording temporary prompts, complete the following checklist.

Procedure/Section	Completed
“Choosing prompt numbers” on page 4-4	
“Choosing a recording method” on page 4-6	
“Selecting a trunk” on page 4-11	
“Installing sound equipment” on page 4-15	
“Accessing the Prompt Loading Facility (PLF)” on page 4-17	
“Select PLF Channel screen” on page 4-19	

The Prompt Loading Facility should be open to the `Channel Actions` screen. Complete the actions required on the checklist above, then use one of the following recording procedures to record your temporary prompts.

No.	Recording procedure
1	“Recording individual prompts onto the MRS” on page 4-27
2	“Recording individual prompts from tape” on page 4-28
3	“Recording prompts onto the MRS” on page 4-30
4	“Recording a list of prompts on tape” on page 4-35
5	“Recording DTMF prompts onto the MRS” on page 4-39
6	“Recording DTMF prompts on tape” on page 4-44

Maximum Recording Length

The maximum recording length for a prompt is pre-set at 15 minutes (factory-shipped). The valid value for this parameter can be set from 1 to 65 535 minutes.

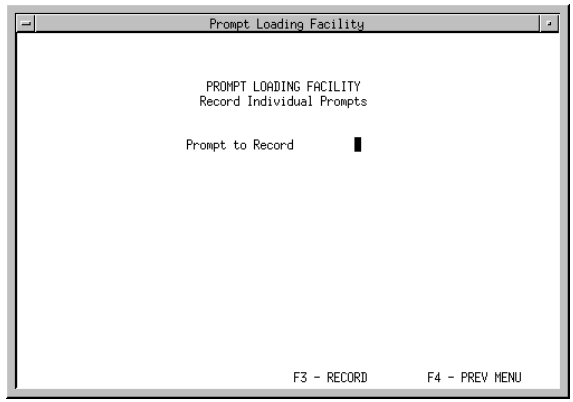
This field is set, during configuration, to limit the maximum amount of time that any one continuous record or append operation may run. For additional information, refer to the chapter, "Configuration Menu (/sci/config)," in the *Symposium OPEN IVR 4.0 Service Console Interface Reference Manual.*

Recording individual prompts onto the MRS

You can record one prompt at a time directly onto the MRS through a telephone or microphone.

1 From the `Channel Actions` screen, select `Record Individual Prompts`.

The system displays the `Record Individual Prompts` screen.



2 Type a prompt number that is within the range of prompts you have assigned to your application prompts.

3 When you are ready to record, press <F3> for “Record.”

The following message appears, where *n* is the number of the prompt:

`Recording prompt n.`

4 Speak the text of the prompt or start the tape to record.

5 When you finish, press <F3> for “Terminate” to stop recording, or, if you make a mistake and do not want to keep the recording, press <F4> for “Abort.”

If you press <F3>, you see the following message:

`terminating record....`

The system saves the recording as a temporary prompt.

If you press <F4>**,** you see the following sequential messages:

```
Aborting record...
Record of n not successful.
Command was aborted.
```

The system does not save the recording.

6 Repeat steps 2 through 5 to record more temporary prompts.

7 When you have completed recording your individual prompts, press <F4> to return to the `Channel Actions` screen.

Recording individual prompts from tape

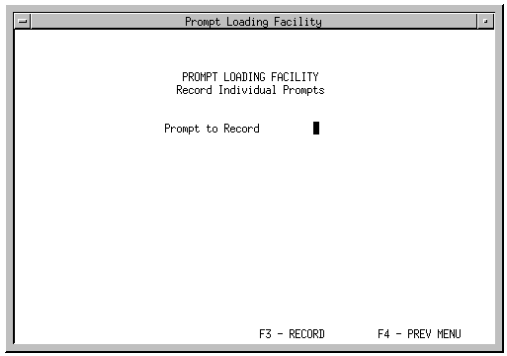
You can prerecord one or more prompts onto tape, then load the completed recording onto the MRS one prompt at a time. The recording does not include DTMF tones.

1 Prerecord the prompts onto tape. To make the recording, simply record the prompts one after another.

Allow some silence between the prompts, because you will need time to start and stop the tape recorder each time you load a prompt onto the MRS.

2 From the PLF `Channel Actions` screen, select `Record Individual Prompts`.

The `Record Individual Prompts` screen is displayed.



3 Type the number of a prompt within the range of prompts you have defined for your applications.

4 When you are ready to record, press <F3> for `Record`.

The system displays the following message, where *n* is the number of the prompt:

`Recording prompt n.`

5 Press the Play button on the tape recorder to play the prompt. When the prompt finishes playing, press <F3> for "Terminate" to stop recording, or, if you make a mistake and don't want to keep the recording, press <F4> for "Abort." Then stop the tape recorder.

If you press <F3>, you see the following message:

```
terminating record...
```

The system saves the recording as a temporary prompt.

If you press <F4>, you see the following messages, one after the other, where *n* is the number of the prompt:

```
Aborting record...
Record of n not successful.
Command was aborted.
```

The system does not save the recording.

6 Repeat steps 3 through 5 to record more temporary prompts. When done, press <F4> to return to the `Channel Actions` screen.

Recording prompts onto the MRS

You can record a series of prompts directly onto the MRS with a telephone. You can use the phone's telephone keys to produce DTMF tones to start and end the recording process for each prompt in the series.

CAUTION

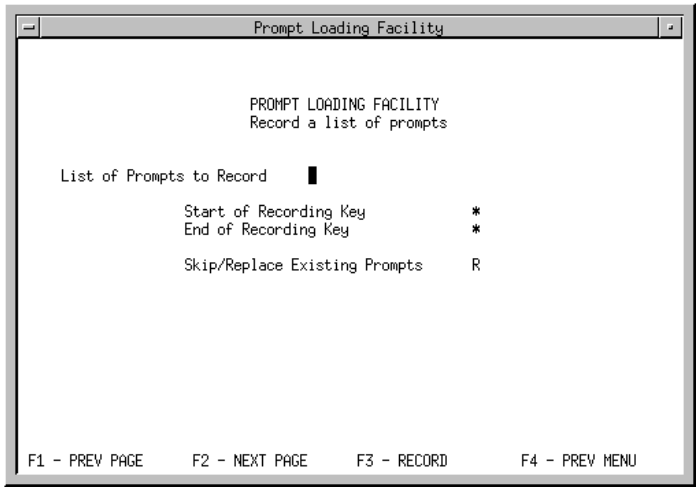
Risk of data loss

The PLF screen can list a maximum of 112 prompts. Do not record more than 112 prompts at one time.

Record a list of prompts screen

This section provides information on the fields in the `Record a list of prompts` screen.

Figure 4-3: Record a list of prompts screen


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
List of Prompts to Record
Start of Recording Key *
End of Recording Key *
Skip/Replace Existing Prompts R
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - RECORD
F4 - PREV MENU

The screen contains the following fields:

List of Prompts to Record
The list of prompts you want to record.

Start of Recording Key
The telephone key that you plan to press to indicate the beginning of each prompt.

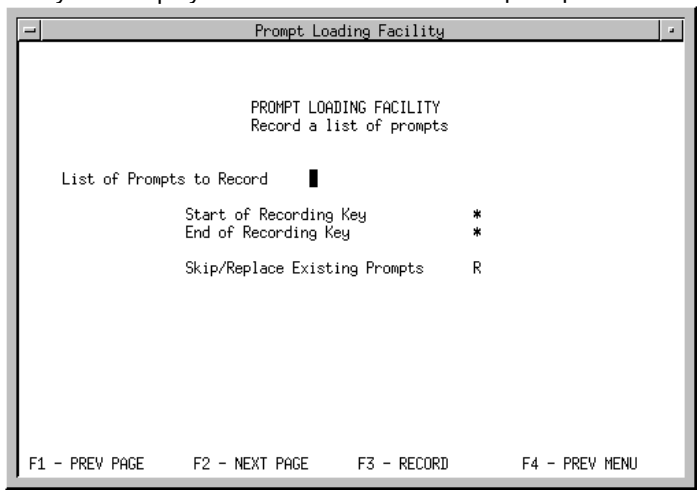
End of Recording Key
The telephone key that you plan to press to indicate the end of each prompt.

Skip/Replace Existing Prompts
Indicates whether you prefer to skip or replace existing prompts. If your list of prompts includes some temporary prompts that have been previously recorded, you have two options: (1) skip those prompts or (2) rerecord them. The “skip” option prevents you from accidentally rerecording temporary prompts that you want to keep.

Recording a list of prompts onto the MRS

1 From the PLF `Channel Actions` screen, select `Record a List of Prompts.`

The system displays the `Record a list of prompts` screen.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
List of Prompts to Record
Start of Recording Key *
End of Recording Key *
Skip/Replace Existing Prompts R
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - RECORD
F4 - PREV MENU

2 Enter your list of prompts. You may use commas and dashes.

For example, to record prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3,5,7,4-11 without spaces.

If you want, change the `Start of Recording Key` and the `End of Recording Key.` You may use any of the DTMF digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, #, or *. You can use the same digit for both keys, but you should choose two different ones.

You can also change the `Skip/Replace Existing Prompts` field.

3 When done, press <F3> to begin recording.

The system records the prompts in the order that you entered them. After you press <F3>, you see the following message:

```
Waiting for start record digit.
```

The <F3> key lets you stop the recording process for the current prompt. The <F4> key stops the entire recording process.

> **ATTENTION**
>
> For the following steps, go from one step to the next without delay. If you pause for more than 10 seconds, the Prompt Loading Facility fails to record the next prompt on the list and skips ahead to the prompt after it.

4 Press the telephone key you chose as the “Start of Recording” key.

The following messages are displayed:

```
Recording prompt n.
Hit end record key to
terminate recording
```

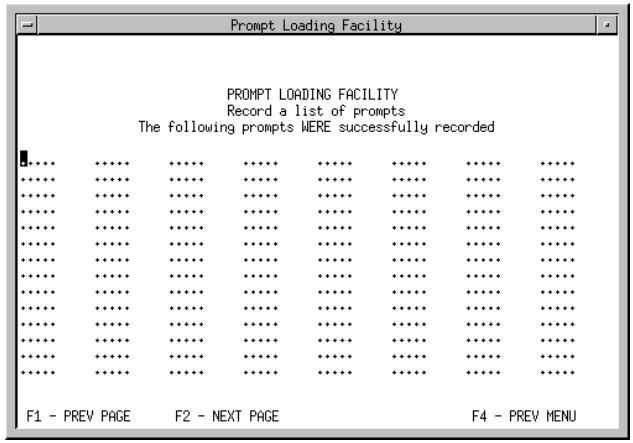
5 Say the prompt you are recording. When done, press the telephone key you chose as the `End of Recording Key`.

The following messages are displayed:

```
Record of prompt n done.
Waiting for start record key.
```

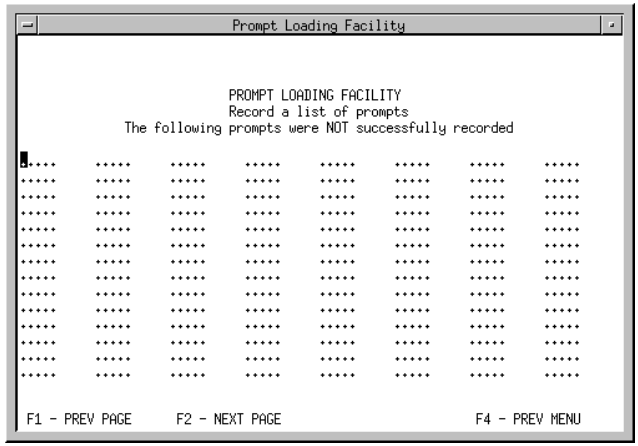
6 Repeat steps 3 through 5 until you record all of the prompts. When done, press <F2>.

The `Record a List of Prompts` screen is displayed. It lists the prompts that recorded successfully.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
The following prompts WERE successfully recorded
F1 - PREV PAGE
F2 - NEXT PAGE
F4 - PREV MENU

7 Press <F2> to go to the next page.

This screen lists the prompts that did not record successfully.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
The following prompts were NOT successfully recorded
F1 - PREV PAGE
F2 - NEXT PAGE
F4 - PREV MENU

8 If necessary, repeat steps 3 through 6 to record more temporary prompts. When you finish recording temporary prompts, press <F4> to return to the `Channel Actions` screen.

Recording a list of prompts on tape

You can prerecord a series of prompts onto a tape. You use DTMF digits to mark the start and end of each prompt. After you complete your recording, you load the prompts onto the MRS.

To record a list of prompts to tape, follow these steps.

1 Write a script for the recording. Decide on the order in which you want to record the prompts.

2 Choose DTMF digits for the “Start of Recording Key” and the “End of Recording Key.”

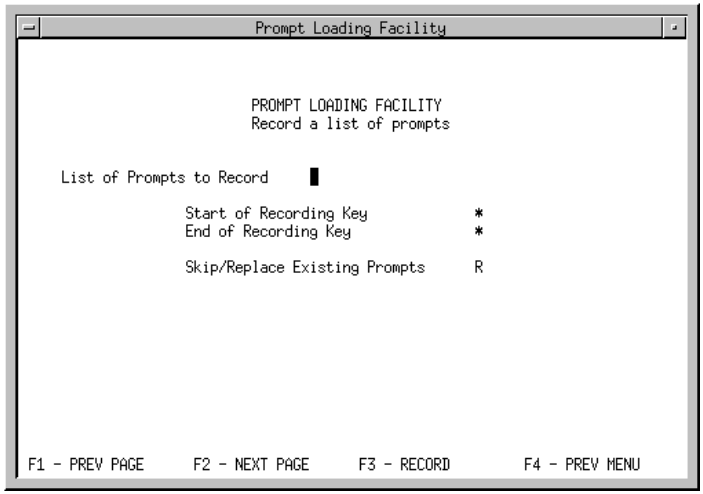
The sounds of these two digits mark the beginning and end of each prompt. You may use any of the DTMF digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, #, and *. You may use the same digit for both keys, but you should use different digits.

3 Record the prompts and DTMF digits onto the tape in the following order:

- **a** Start of Recording Key
- **b** At least 4 seconds of silence (but no more than 10)
- **c** Speech for first prompt
- **d** At least 3 seconds of silence (but no more than 10)
- **e** End of Recording Key
- **f** Repeat steps a–e sequence for each remaining prompt.

4 From the `Channel Actions` screen, select `Record a List of Prompts`.

The `Record a list of prompts` screen is displayed. For a detailed explanation of the fields on the screen, refer to “Record a list of prompts screen” on page 4-30.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
List of Prompts to Record
Start of Recording Key *
End of Recording Key *
Skip/Replace Existing Prompts R
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - RECORD
F4 - PREV MENU

5 Enter your list of prompts.

You can use dashes and commas in the list. For example, to record prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3,5,7,4-11 without spaces. Be sure to enter the list of prompts in the same order that you have recorded them on tape.

If you want, change the “Start of Recording Key” and the “End of Recording Key.” Do the same for the `Skip/Replace Existing Prompts` field. You can then begin to load prompts from the tape onto the MRS.

6 Press <F3> to see the following message on the screen:

`Waiting for start record digit.`

7 If you want to abort the recording process for the current prompt, press the <F3> key. To end the whole recording process, press <F4>.

Note: If you press <F3>, you must let the tape continue playing until the end. Otherwise, the Prompt Loading Facility cannot complete its operations.

8 Press the <Play> button on the tape recorder.

The Prompt Loading Facility detects the Start of Recording Digit and the following messages appear on the screen:

```
Recording prompt n.
Hit end record key to
terminate recording
```

When the first prompt finishes playing and the Prompt Loading Facility detects the End of Recording digit, you see the following messages:

```
Record of prompt n done.
Waiting for start record key.
```

As the loading process continues, you see these same screen messages each time the Prompt Loading Facility loads a prompt. When the Prompt Loading Facility loads the last prompt, it automatically stops the loading process.

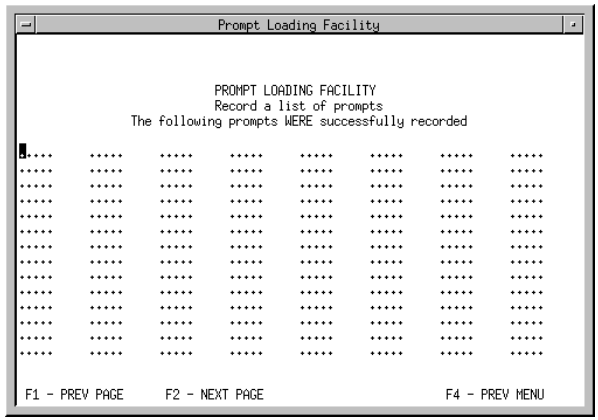
9 Turn off the tape recorder.

Check to see which prompts loaded successfully and which, if any, did not.

10 Press <F2> to continue to the next page.

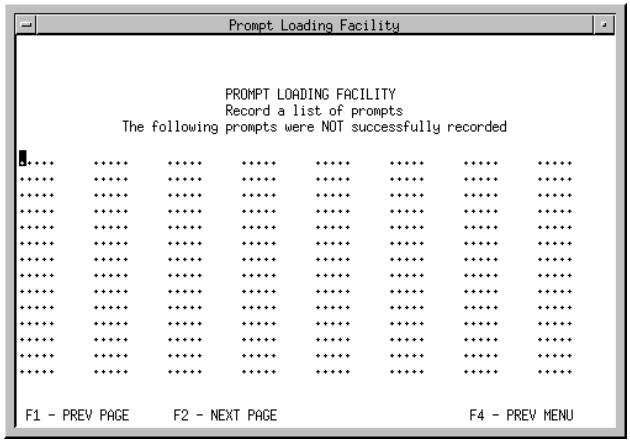
The system displays the `Record list of prompts` screen. This screen lists the prompts that recorded successfully.

Note: This screen can list a maximum of 112 prompts. Do not record more than 112 prompts at one time.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
The following prompts WERE successfully recorded
F1 - PREV PAGE
F2 - NEXT PAGE
F4 - PREV MENU

11 Press <F2> to continue to the next page.

The `Record a List of Prompts` screen is displayed. This screen lists the prompts that did not record successfully.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
The following prompts were NOT successfully recorded
F1 - PREV PAGE
F2 - NEXT PAGE
F4 - PREV MENU

12 Repeat steps 1–11 to record more temporary prompts. When you finish, press <F4> to return to the `Channel Actions` screen.

Recording DTMF prompts onto the MRS

You can record a series of prompts directly onto the MRS through a telephone. You use the telephone keys to produce DTMF digits. DTMF digits identify the prompt numbers, and other digits identify the beginning and end of each prompt and the end of the whole recording process.

Note: This method is particularly useful when you are off-site or away from the AP and want to load prompts onto the MRS.

CAUTION

Risk of overwriting existing prompts

When you are recording prompts with DTMF prompt numbers, you should be aware of prompts already existing on the MRS.

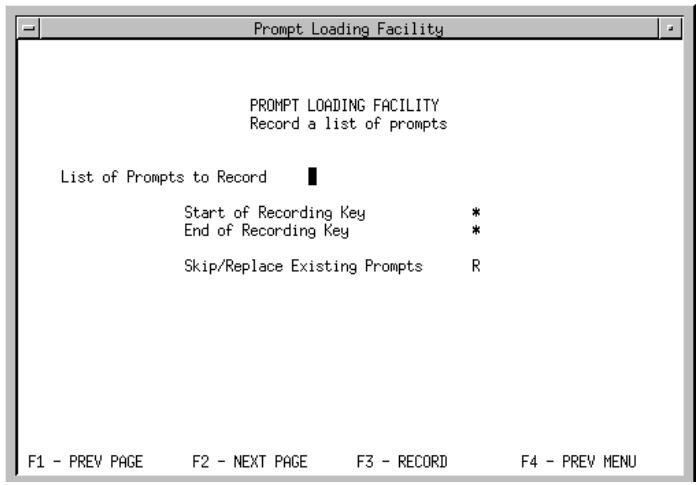
To record your prompts, follow this sequence of DTMF tones and speech:

- Prompt number
- Prompt Number Termination Key
- Start of Recording Key
- Speech for the prompt
- End of Recording Key
- Repeat the above sequence for each remaining prompt.
- End of Tape Key

Record Prompts with DTMF Separators screen

This section provides information on the fields in the `Record Prompts with DTMF Separators` screen.

Figure 4-4: Record Prompts with DTMF Separators screen


Prompt Loading Facility
PROMPT LOADING FACILITY
Record a list of prompts
List of Prompts to Record
Start of Recording Key *
End of Recording Key *
Skip/Replace Existing Prompts R
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - RECORD
F4 - PREV MENU

The screen contains the following fields:

Start of Recording Key
The telephone key that you plan to press to indicate the beginning of each prompt.

End of Recording Key
The telephone key that you plan to press to indicate the end of each prompt.

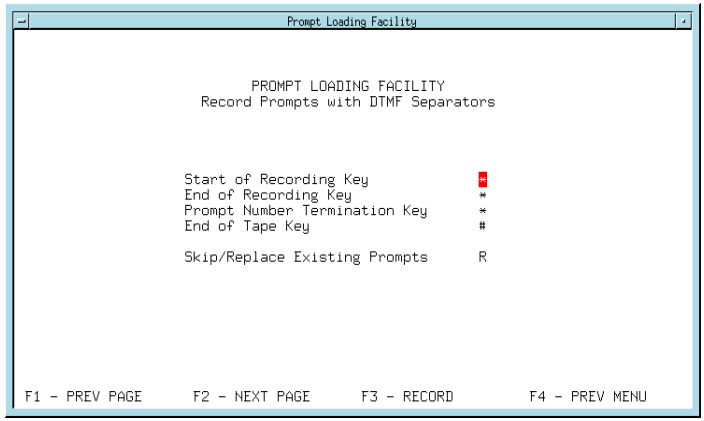
Skip/Replace Existing Prompts
Indicates whether you prefer to skip or replace existing prompts. If your list of prompts includes some temporary prompts that have been previously recorded, you have two options: (1) skip those prompts or (2) rerecord them. The “skip” option prevents you from accidentally rerecording temporary prompts that you want to keep.

Recording DTMF prompts onto the MRS

To record DTMF prompts onto the MRS, follow these steps.

1 From the `Channel Actions` screen, select `Record with DTMF Prompt Numbers.`

The system displays the following screen.


Prompt Loading Facility
PROMPT LOADING FACILITY
Record Prompts with DTMF Separators
Start of Recording Key #
End of Recording Key *
Prompt Number Termination Key *
End of Tape Key #
Skip/Replace Existing Prompts R
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - RECORD
F4 - PREV MENU

2 Choose DTMF digits to be the “Start of Recording Key,” the “End of Recording Key,” and the “Prompt Number Termination Key.”

You may use any of the DTMF digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 for the “Start of Recording Key.” The “End of Recording Key” and the “Prompt Number Termination Key” must be either # or *. You may use the same digit for all three keys, but choosing different ones is better.

3 Choose a DTMF digit to be the “End of Tape Key.”

The digit that you select as the “End of Tape Key” must be either # or *. If you want, you can change the “Skip/Replace Existing Prompts” field.

> **ATTENTION**
>
> For the following steps, go from one step to the next without delay. If you pause for more than 10 seconds, the Prompt Loading Facility will not record the next prompt on the list and skips ahead to the prompt after it.

4 Press <F3> to begin recording.

The following message appears:

```
Waiting for prompt number.
```

5 Press telephone keys to provide the prompt number, then press the “Prompt Number Termination Key.” (If you want to stop the recording process, press <F4> for “Quit.”)

After you press the “Prompt Number Termination Key,” you see the following message:

```
Waiting for start record key.
```

The <F3> key stops the recording process for the current prompt and continues on to the next prompt. The <F4> key stops the entire recording process.

6 Press the “Start of Recording Key.” The following message appears:

```
Recording prompt n. Hit end record key to
terminate recording.
```

7 When you finish, press the “End of Recording Key.”

The following messages appear:

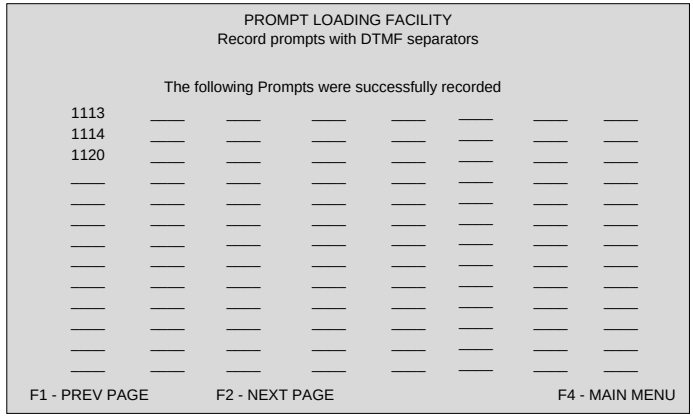
```
Record of prompt n done.
Waiting for start record key.
F4 - QUIT
```

8 Repeat steps 4 through 7 to record the rest of the prompts. When you finish, press the “End of Tape Key” to end the recording process.

9 Check to see which prompts recorded successfully and which ones did not.

10 Press <F2> to display the second page of the `Record Prompts with DTMF Separators` screen.

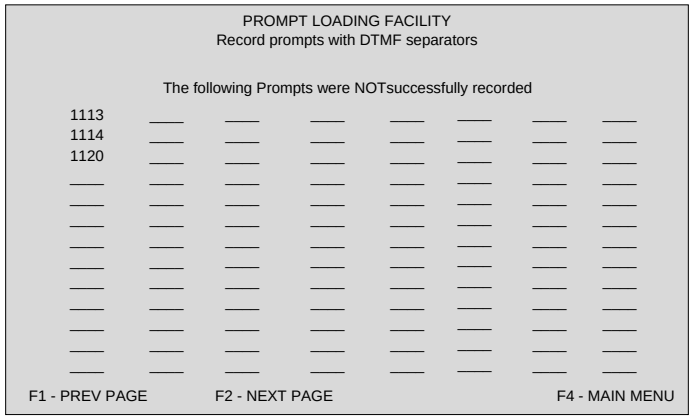
This screen displays a list of prompts that recorded successfully.



Note: This screen can list up to a maximum of 112 prompts, so you should not record more than 112 prompts at one time.

11 Press <F2> to go to the next page.

This screen lists the prompts that did not record successfully.



12 Repeat steps 1–11 to record more temporary prompts. When you finish, press <F4> to return to the `Channel Actions` screen.

Recording DTMF prompts on tape

You can prerecord a series of prompts onto a tape. You use DTMF digits to mark the start and end of each prompt, to mark the end of the entire recording, and to label each prompt with its prompt number. After you complete your recording, you load it onto the MRS.

Note: This method is particularly useful when you are off-site or away from the AP and want to load prompts on the MRS.

CAUTION
Risk of data loss

The PLF screen can list a maximum of 112 prompts. Do not record more than 112 prompts at one time.

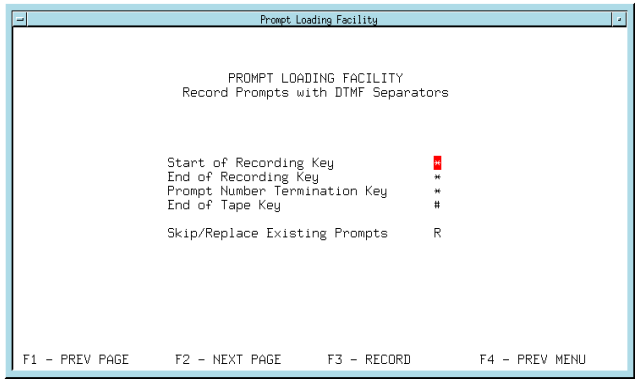
To record DTMF prompts on tape, follow these steps.

1. Write a script for the recording. Decide on the order in which you want to record the prompts.
2. Choose the DTMF digits for the “Start of Recording Key,” the “End of Recording Key,” and the “Prompt Number Termination Key.”

   You may use any of the DTMF digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. You may use the same digit for all three keys, but choosing different ones is better.
3. Choose either # or * as the DTMF digits for the “End of Tape Key” and the “Prompt Number Termination Key.”
4. Record the voice text and DTMF digits on tape in the following order:
   - **a** Prompt number
   - **b** Prompt Number Termination Key
   - **c** Start of Recording Key
   - **d** At least 4 seconds of silence (but no more than 10)
   - **e** Speech for first prompt
   - **f** At least 3 seconds of silence (but no more than 10)
   - **g** End of Recording Key
   - **h** Repeat steps a–g for each remaining prompt.
   - **i** End of Tape Key

5 Select `Record with DTMF Prompt Numbers` on the `Channel Actions` screen.

The system displays the following screen.



Refer to “Record Prompts with DTMF Separators screen” on page 4-40 for detailed information about the fields on this screen.

6 Enter your list of prompts.

You can use dashes and commas in the list. For example, to record prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3, 5, 7, 9-11 without spaces. Be sure to enter the list of prompts in the same order that you have recorded them on tape.

7 If you want, change the “Start of Recording Key” and the “End of Recording Key.” Do the same for the “Skip/Replace Existing Prompts” field.

8 Press <F3>.

The following message appears:

```
Waiting for prompt number.
(If you want to stop the recording process, press
<F4> for “Quit.”)
```

9 Press the Play button on the tape recorder.

The Prompt Loading Facility detects the first prompt number, the "Prompt Number Termination" tone, and the "Start of Recording" tone.

The following message appears:

```
Waiting for start record key.
```

Note: You can press the <F3> key to abort the recording process for the current prompt and move on to the next prompt. You can press <F4> to end the whole recording process. If you press <F3>, you must let the tape continue playing until the end. Otherwise, the Prompt Loading Facility cannot complete its operations.

The system loads the first prompt from the tape and the following messages appear:

```
Recording prompt n.
Hit end record key to terminate recording.
```

Next, the Prompt Loading Facility detects the "End of Recording" tone, and you see the following messages:

```
Record of prompt n done.
Waiting for new prompt number.
```

As the loading process continues, you see these same screen messages each time the system loads a prompt.

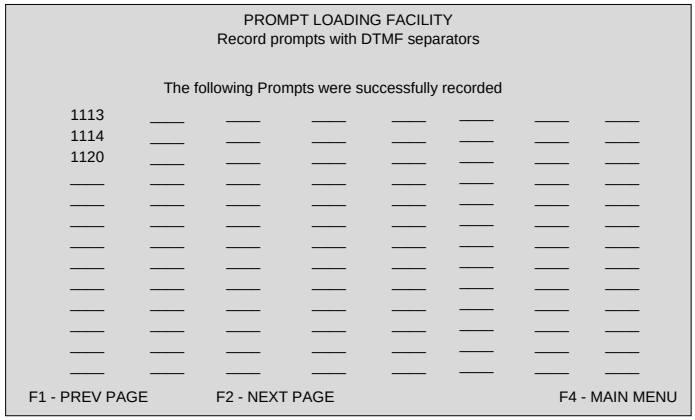
10 When you hear the last prompt, the last "End of Recording Digit," and the "End of Tape" digit play, stop the tape recorder.

The Prompt Loading Facility stops the loading process automatically.

11 Check to see which prompts loaded successfully and which prompts, if any, did not.

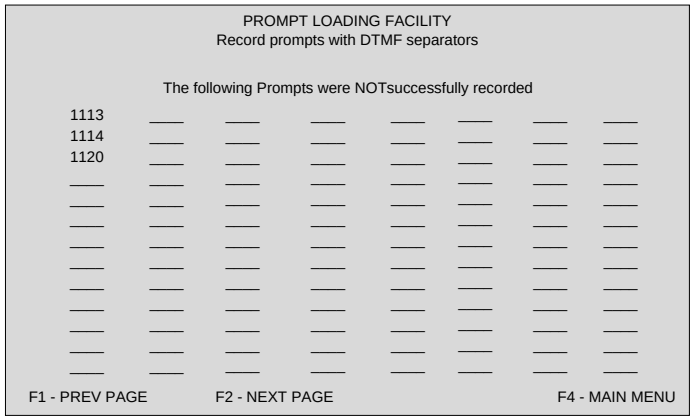
12 Press <F2> to continue to the next page.

The second page of the `Record prompts with DTMF separators` screen is displayed. This screen lists the prompts that recorded successfully.



13 Press <F2> to continue to the next page.

The third page of the `Record prompts with DTMF separators` screen is displayed. This screen lists the prompts that did not record successfully.



14 Repeat steps 1–14 to record more temporary prompts. When you are finished, press <F4> to return to the `Channel Actions` screen.

Reviewing and installing temporary prompts

In this procedure, you review the prompts you created when you followed the "Recording temporary prompts" procedure. The temporary prompts can be rerecorded prior to installation, if required. Once the prompts are satisfactorily recorded, they are installed, and can then be used by the applications.

The prerequisites for reviewing and installing temporary prompts are as follows:

- "Choosing prompt numbers" on page 4-4
- "Choosing a recording method" on page 4-6
- "Selecting a trunk" on page 4-11
- "Installing sound equipment" on page 4-15
- "Accessing the Prompt Loading Facility (PLF)" on page 4-17
- "Select PLF Channel screen" on page 4-19
- "Recording temporary prompts" on page 4-25

Note: If you have not completed these steps, turn to the appropriate sections and complete them before you continue.

CAUTION
Risk of data loss

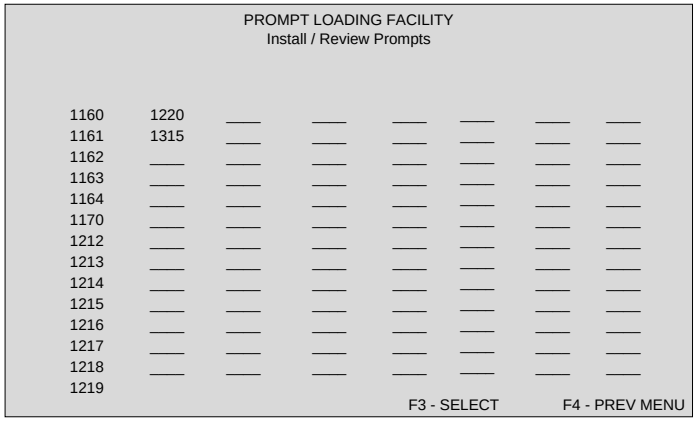
The PLF screen can list a maximum of 112 prompts. Do not record more than 112 prompts at one time.

The Prompt Loading Facility should be open to the `Channel Actions` screen.

To review and install temporary prompts, follow these steps.

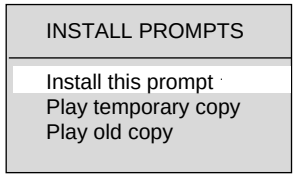
1 From the `Channel Actions` screen, select `Review and Install Temporary Prompts.`

The system displays the `Install/Review Prompts` screen. This screen lists all the temporary prompts that you recorded but did not install.



2 If necessary, use the arrow keys to move the cursor to a prompt you want to review or install. Press F3 for “Select.”

The `Install Prompts` pop-up menu appears.



Use the `Install Prompts` pop-up menu to perform one of the following actions.

Action	See Step
Install the temporary prompt, as a replacement for the old prompt.	5
Play temporary copy, to listen to the recording.	3
Play old copy, so you know what you are replacing.	4

3 To listen to the temporary prompt, use the arrow keys to move the cursor to “Play temporary copy” and press <Enter>.

The system displays the following messages:

```
Now playing temporary copy of prompt n.
Abort stops this prompt.
Quit stops playing prompts.
```

At the same time, you hear the prompt play. (If you want to stop playing this prompt, press <F3> for “Abort” or <F4> for “Quit.”) When playback ends, the pop-up menu disappears.

If the system detects falsing while playing this prompt, you also see the following message:

```
Warning: Prompt n false digits.
```

Note: To install prompts, go to step 5.

4 To listen to the old copy, use the arrow keys to move the cursor to “Play old copy” and press <Enter>.

The system displays the following messages:

```
Now playing prompt n.
Abort stops this prompt.
Quit stops playing prompts.
```

At the same time, you hear the old, previously installed version of the prompt.

If the system detects falsing while playing this prompt, you also see the following message:

`Warning: Prompt n falses digits.`

If you want to stop playing this prompt, press <F3> for “Abort” or <F4> for “Quit.” When playback ends, the messages disappear.

To install prompts, go to Step 5.

5 Use the arrow keys to move the cursor to “Install this prompt” and press <Enter>.

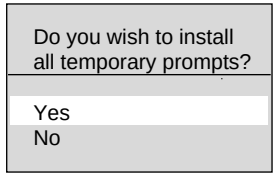
You see the following message:

`Installing prompt` *n*`.`

When the system completes the installation process, the message disappears. At the same time, the prompt number disappears from the list on the screen.

6 Repeat steps 3, 4, and 5 (in any order) to go through the list of temporary prompts to play the ones you want to hear and install the ones you want to keep. When you finish, press <F4> to return to the `Channel Actions` screen.

If uninstalled temporary prompts remain on the list, you see the “Do you wish to install all temporary prompts?” pop-up menu.



7 If you select “Yes,” the system installs all of the temporary prompts that remain on the list and then returns to the `Channel Actions` screen.

8 If you select "No," the system returns to the `Channel Actions` screen. It does not install the temporary prompts, but they remain on the list so you can install them later. (When you exit the Prompt Loading Facility, the system deletes any temporary prompts that remain on the list.)

If no more uninstalled temporary prompts remain on the list, the system returns to the `Channel Actions` screen. (No pop-up menu appears.)

Note: If you play the prompts without reviewing them, make sure the prompts contain no falsing.

Deleting prompts

You can delete any prompt that the applications do not need.

Note: If you use the following procedure, the system deletes only prompts that you have selected from the MRS. If you want to delete system-wide prompts, repeat the deletion steps on each MRS.

The prerequisite procedures for deleting prompts are as follows:

- "Choosing prompt numbers" on page 4-4
- "Selecting a trunk" on page 4-11
- "Accessing the Prompt Loading Facility (PLF)" on page 4-17
- "Select PLF Channel screen" on page 4-19

The Prompt Loading Facility should now be open to the `Channel Actions` screen. (If you have not completed these procedures, complete them before you continue.)

To delete prompts, follow these steps.

1 From the `Channel Actions` screen, select `Delete Unused Prompts`.

The system displays the `Prompt Deletion Option` screen.

2 Enter the prompt number or a range of prompt numbers to delete. You may use commas and dashes in the list.

For example, to delete prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3,5,7,4-11 without spaces.

After you type the prompt numbers, press <F3> for "Delete." The following messages appear:

`Now deleting prompt` *n*`.`
`Quit stops deleting all prompts.`

If you press <F4>, the system stops the deletion process.

The system displays these messages for each prompt in turn. After the system deletes the last prompt, the messages disappear.

3 If you need to delete more prompts, repeat step 2.

4 Press <F4> to return to the `Channel Actions` menu.

Backing up and restoring prompts

CAUTION

Risk of data loss

If the PLF encounters more than 112 errors during restore or backup, it will stop the backup or restore process.

Do not record more than 112 prompts in one sessions without installing them in-between, or an error will occur and all prompts will be lost.

Backing up is the process of copying prompts from an MRS disk drive to the AP's disk drive. Restoring is the process of copying prompts from the AP's disk drive to the MRS disk drive.

There are two ways to begin the procedures in this section:

- If you followed the procedures in this chapter to play, record, or delete prompts, you have already selected a channel for Prompt Loading Facility use. The Prompt Loading Facility is now open to the `Channel Actions` screen. You can leave the channel selected and start from the `Channel Actions` screen.
- Begin at the `Prompt Loading Facility` main menu. You do not have to select a channel.

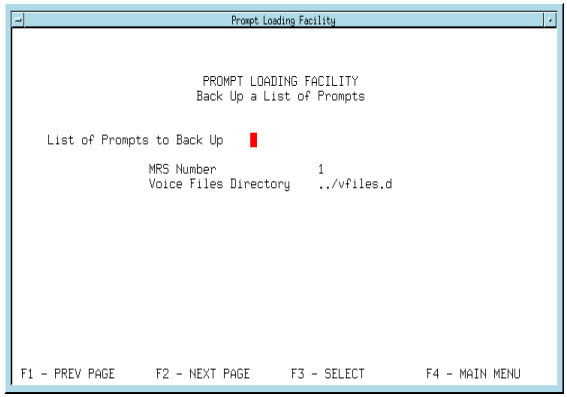
Backing up prompts to the AP from the MRS

If you made any changes to the network, or if you are using the network for the first time, check to see that everything works properly. To do so, perform a backup of a few prompts into an unused directory. If error messages are not displayed, you can assume that the backup is successful. You can then proceed with the instructions in this section.

Back up a list of prompts screen

This section provides information on the fields in the `Back up a list of prompts` screen.

Figure 4-5: Back up a list of prompts screen


Prompt Loading Facility
PROMPT LOADING FACILITY
Back Up a List of Prompts
List of Prompts to Back Up
MRS Number 1
Voice Files Directory ../vfiles.d
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - SELECT
F4 - MAIN MENU

The screen contains the following fields.

List of Prompts to Back Up
A list of numbers identifying the prompts to be backed up.

MRS Number
A number identifying the MRS created when the system is configured. Enter an MRS number in this field when you back up prompts.

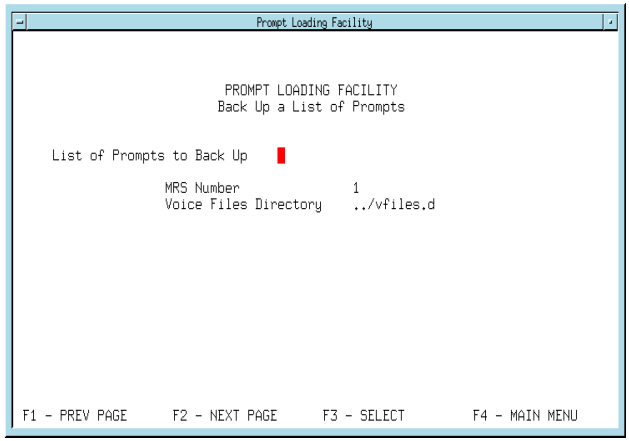
Voice Files Directory
The directory in which you copy the prompts to be stored. This must be an existing directory in the AP's file system. The default directory is `../vfiles.d`.

Backing up prompts to the AP from the MRS

To back up prompts to the AP from the MRS, follow these steps.

1 From the `Prompt Loading Facility` main menu, select `Back up Prompts to Host from MRS`. (In this case, "host" corresponds to the AP.)

The system displays the `Back Up a List of Prompts` screen.


Prompt Loading Facility
PROMPT LOADING FACILITY
Back Up a List of Prompts
List of Prompts to Back Up
MRS Number 1
Voice Files Directory ../vfiles.d
F1 - PREV PAGE
F2 - NEXT PAGE
F3 - SELECT
F4 - MAIN MENU

2 Enter the list of prompts you want to back up.

You may use commas and dashes in the list. For example, to back up prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3,5,7,9-11 without spaces. Specify the MRS identifier and the file directory.

3 When you are ready to begin the backup procedure, press <F3> for "Select."

The system makes a copy of the first prompt. Next, the system transfers the copy to the AP. The following message is displayed:

`Transferring Prompt` *`n`* `from node:` *`"node_name"`*

where `node_name` is the name of the MRS, as defined in the system configuration. The system repeats these two screen messages for each prompt you back up.

Note: If you see an error message on the screen, for more information, refer to the "Transaction Log Messages" chapter in the *Symposium OPEN IVR 4.0 Error Messages Guide*.

4 Repeat steps 2 and 3 to back up more prompts.

5 Press <F4> to return to the `Prompt Loading Facility` main screen.

6 Select “Exit” to close the Prompt Loading Facility.

Restoring prompts from the AP to the MRS

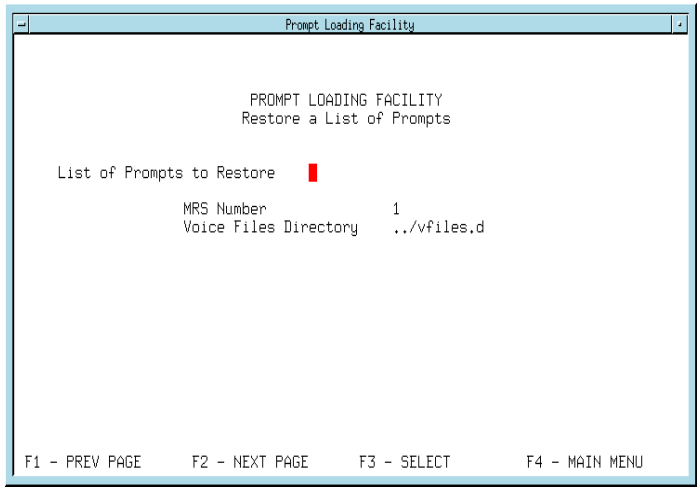
If you backed up prompts onto the AP, you can restore them to the MRS from which they are backed up.

Before you begin, if you have made any changes to the network or if you are using the network for the first time, check to see that everything works properly. To do so, back up a few prompts into an unused directory. If you see `vsn` files with appropriate sizes in the backup directory and no error messages, assume that the backup was successful. You can then proceed with the instructions in this section.

Restore a List of Prompts screen

This section provides information on the fields in the `Restore a List of Prompts` screen.

Figure 4-6: Restore a List of Prompts screen



The screen contains the following fields.

List of Prompts to Restore
A list of numbers identifying the prompts to be restored.

MRS Number
A number identifying the MRS created when you configured the system. Enter an MRS number in this field when you restore prompts.

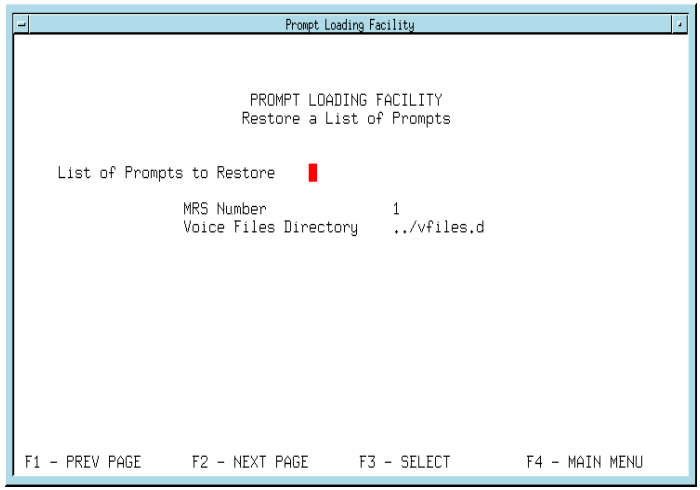
Voice Files Directory
The directory in which you want copies of the prompts to be stored. This must be an existing directory in the AP's file system. The default directory is `./vfiles.d`.

Restoring prompts

To restore prompts from the AP to the MRS, follow these steps.

1 From the `Prompt Loading Facility` main menu, select `Restore Prompts from Host to MRS`. (In this case, "host" corresponds to the AP.)

The system displays the `Restore a List of Prompts` screen.



2 Enter the list of prompts you want to restore. You may use commas and dashes in the list.

For example, to restore prompts 1, 2, 3, 5, 7, 9, 10, and 11, type 1-3,5,7,9-11 without spaces. Specify the MRS number and the file directory.

3 When you are ready to begin restoring the prompts, press <F3> for Select.

The following message appears:

```
Transferring prompt X to node_name: xxx
Deleting Temporary copy of prompt
Now distributing prompt x
```

where *x* is the prompt number for the prompt you are restoring, and *xxx* is the name of the node as defined in the system configuration.

The system repeats these messages for each prompt you restore. When you are restoring system-wide prompts, they will be distributed system-wide.

Note: If you see an error message on the screen, for more information, refer to the "Transaction Log Messages" chapter in the *Symposium OPEN 4.0 IVR Error Messages Guide*.

4 Repeat steps 2 and 3 to restore more prompts.

5 Press <F4> to return to the `Prompt Loading Facility` main menu.

6 Select `Exit` to close the `Prompt Loading Facility`.

Exiting from the Prompt Loading Facility

Note: Any remaining temporary prompts are deleted when you exit from the PLF.

Follow this procedure when you finish a Prompt Loading Facility session. You should see the `Channel Actions` screen on your monitor.

To exit from the PLF, follow these steps.

1 If you have been using a telephone for playing or recording prompts, hang up the phone.

2 From the `Channel Actions` screen, press <F4>.

The system displays the `Prompt Loading Facility` main menu. The system automatically deselects the channel you selected for Prompt Loading Facility use and makes it available for other uses. If you recorded any temporary prompts but have not installed them, the system automatically deletes them.

3 From the `Prompt Loading Facility` main menu, select `Exit` to close the Prompt Loading Facility.

Chapter 5: Editing prompts with the System Prompt Manager

You can graphically edit prompts to be used on all MRSs by using the graphical System Prompt Manager. The System Prompt Manager allows you to select any prompt for editing that resides on the AP or any connected MRS. This chapter describes tasks needed to use the System Prompt Manager.

The System Prompt Manager is an interactive voice tool that allows you to retrieve a copy of a prompt from the MRS or from a backup file on the Application Processor, examine and modify its contents, and either distribute the edited voice prompt to the MRS or save it on the AP.

Editing features include the capability to

- cut, copy, paste, and delete prompts
- auto-trim silence in graphical or batch mode (not through the application server)
- adjust gain
- convert sections to silence
- compress ADPCM prompts from a 32 kbyte sampling rate to 24 kbytes in graphical or batch mode
- alter encoding technique for compatibility with other MRSs in graphical or batch mode
- add text strings to document the voice file in graphical or batch mode
- undo the last operation
- play selected sections of the prompt through an MRS channel
- remove silence

Prerequisites for using the System Prompt Manager

Before using the System Prompt Manager, you must know the location and the Voice storage number (VSN) of the prompt you wish to edit. The location consists of the following information:

On the MRS

- the channel you want to open
- VSN (voice-storage number)

  Note: In multiple MRS configurations, consult your system configuration to determine which channels are configured on each MRS. Messages must be retrieved separately from each MRS in the configuration.

On the AP

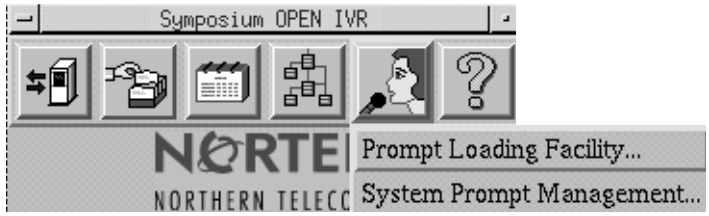
- the directory where the VSN resides
- the name of the file containing the prompt, usually `VSN`*xxxxx*, where *xxxxx* is a five-digit decimal number that is the file number of the prompt to edit

  Note: If the contents of the directory where the VSN resides are changed while you are using the System Prompt Manager, the changes are applied when you restart the System Prompt Manager.

Accessing the System Prompt Manager

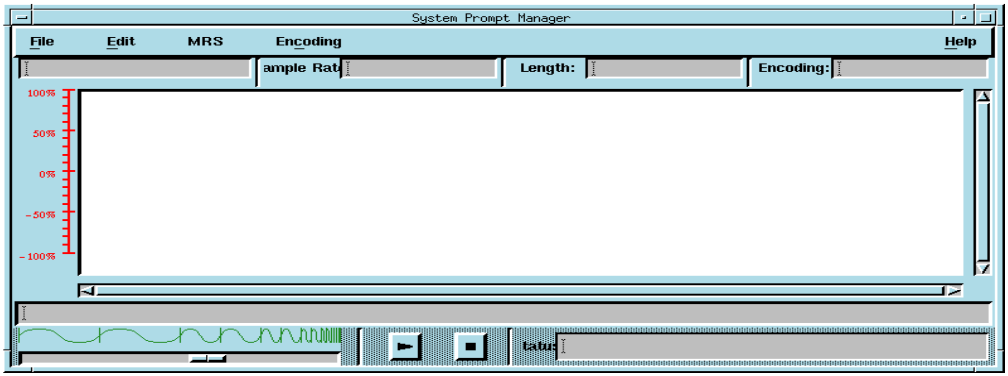
To access the System Prompt Manger, follow these steps.

1 From the Control Panel window, click MB1 on the Prompt Manager button to display the menu.



2 Select the `System Prompt Management` option.

The System Prompt Manager main editing window appears.



System Prompt Manager pull-down menus

Figures 5-1 through 5-4 show the different System Prompt Manager menu options with their corresponding pull-down menus. Many of the menu entries have accelerator keys associated with them. These special key sequences can be pressed at any time while the cursor is in the Prompt Manager window to perform the associated actions.

Figure 5-1: File menu

Figure 5-2: Edit menu

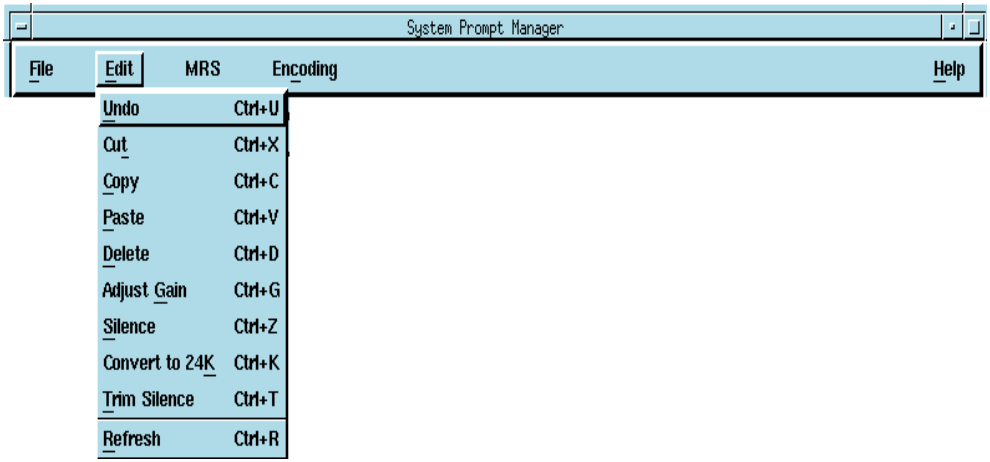


Figure 5-3: MRS menu

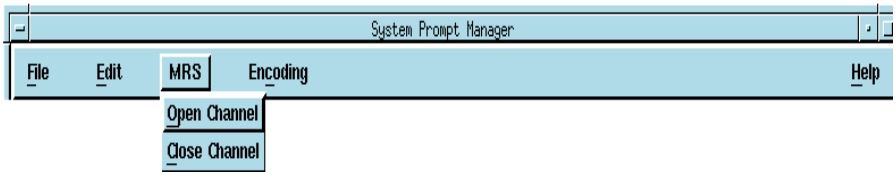
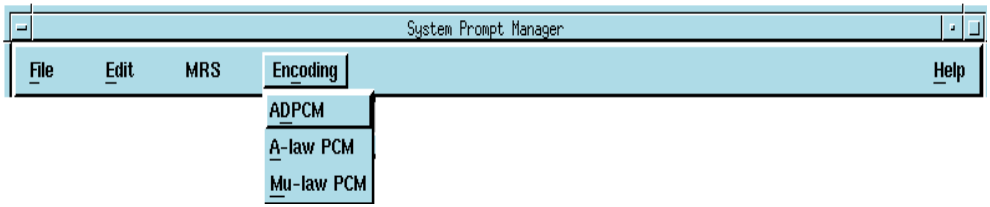


Figure 5-4: Encoding menu



Selecting a prompt for editing

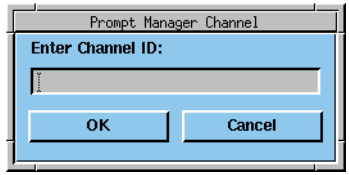
To select a prompt for editing, follow these steps.

1 From the Control Panel, Prompt Management menu, select `System Prompt Manager`.

The `System Prompt Manager` main editing window is displayed.

2 From the MRS menu, select `Open Channel`.

The `Prompt Manager Channel` window appears.



3 Enter the channel number that the prompt will be playing on in the *Channel ID* field.

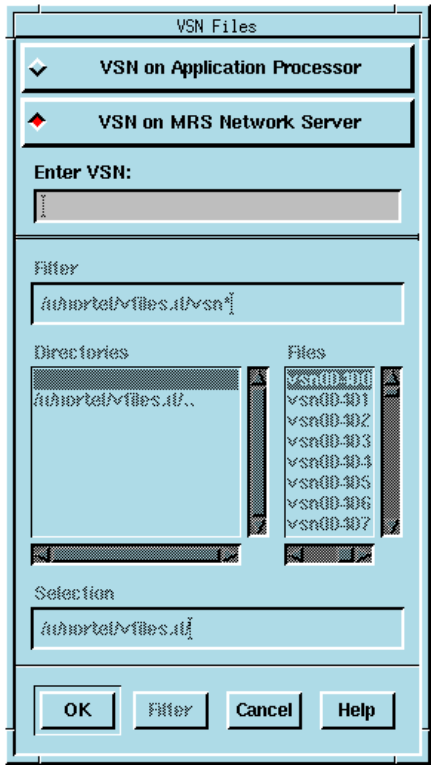
4 Click `OK`.

The window closes after you have confirmed this entry.

5 From the File menu, select `Open`.

The `VSN files` window appears.

Figure 5-5: Selecting a prompt for editing



6 Select `VSN on MRS Network Server` or `VSN on Application Processor`.

7 If you selected `VSN on MRS Network Server`, follow these steps.

a In the `Enter VSN` field, enter the VSN prompt #.

b Click the OK button at the bottom of the window.

The prompt you requested appears in the editing area of the `System Prompt Manager`.

8 If you selected `VSN on Application Processor`, perform the following steps.

a Select the directory for which the prompt resides from the directory scroll area (Figure 5-6) or from Filter by changing the listing and then selecting the prompt name (as documented in the next step).

b Select the prompt name from the file scroll area.

c The selection area shows the full pathname of the prompt selected. You can edit this area directly.

The filter area limits the list of files that will appear in the file scroll area. This area can be edited directly and a new file list can be created by pressing the Filter button at the bottom of the window. VSNs have names that begin with the letters “vsn.”

Figure 5-6: Selecting a prompt for editing

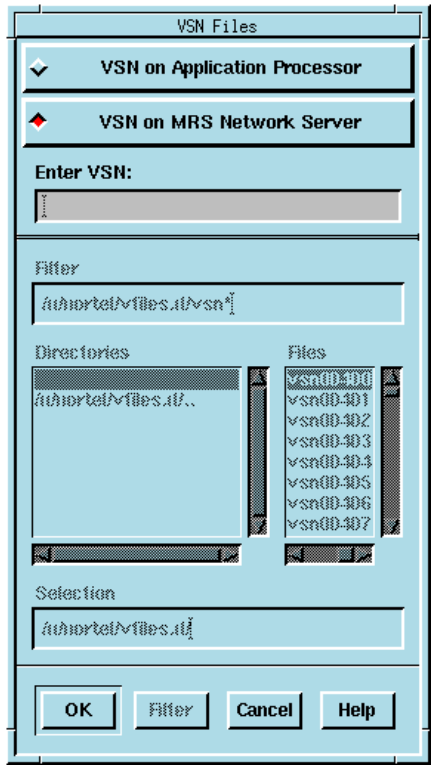
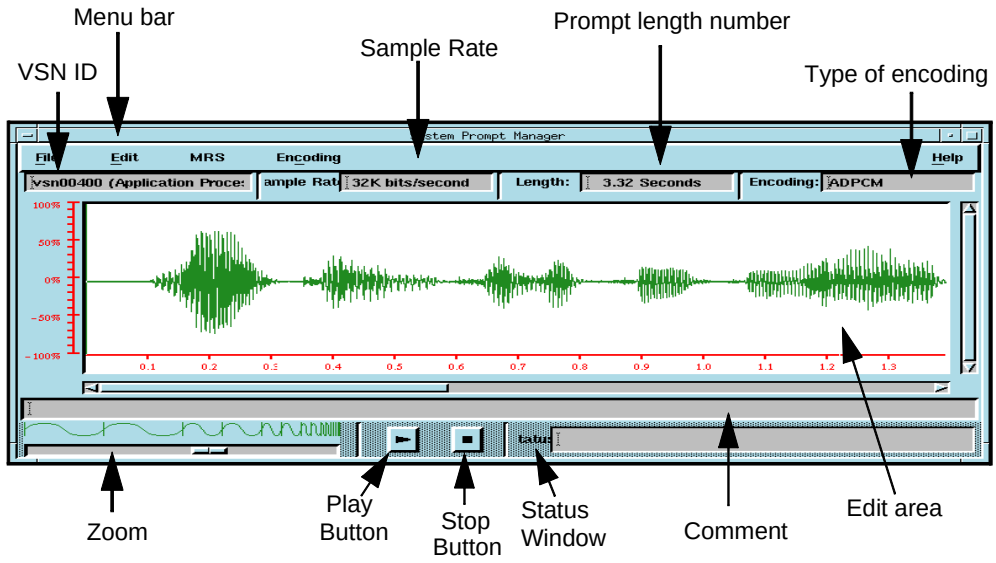


Figure 5-7 shows the layout of the Prompt Editor's main editing window with a sample prompt. A description of each of the features follows the figure.

Figure 5-7: Prompt Manager main editing window displaying a VSN



VSN identifier

Specifies the numerical ID of the voice storage number or the name of the voice file being edited. The location of the VSN appears in parentheses (that is, the Network Server or the Application Processor). If you are editing a voice file, the naming convention is as follows: `vsn00001 = vsn#1` (the number selected is a decimal number).

Sample Rate

Indicates the number of bits required to digitally encode one second of voice. Typical values are 32K or 24K. When a prompt is initially recorded, it is encoded at a specific sampling rate. A reduction in sampling rate is available only for ADPCM encoding. Degradation in sound quality can result. Increasing the current sampling rate can further degrade the quality. Decreasing the sampling rate (for example, converting a prompt with a 32K sampling to a 24K sampling rate) may not noticeably affect the quality of the prompt, but may significantly reduce the disk space required to store the prompt.

To modify the rate, select the `Convert to 24K` option on the `Edit` pull-down menu.

> ***Note:*** You cannot convert from 24K to 32K.

Length

Indicates the length of the current prompt in seconds. Accuracy is to two decimal places.

Encoding

Identifies the method used to digitize the voice. AP software plays only prompts encoded with mu-law pulse code modulation (PCM).

> ***Note:*** Prompts converted from ADPCM to A-law do not play. They appear to play quickly, but sound is not generated. Prompts converted from ADPCM to mu-law do play; however, A-law is the European standard, and mu-law is the North American standard.

Zooming slider

Allows you to compress or stretch the displayed waveform. The slider modifies the display only without causing actual frequency changes. You can zoom in to accurately select points along the waveform, or zoom out to get an overview of the voice patterns. The zoom ranges from 4 samples/pixel to 64 samples/pixel, where each pixel of the display represents .5 to 8 milliseconds respectively.

Comment window

Displays any textual comment associated with the prompt. Comments can contain up to 255 characters and usually contain the actual text of the prompt. You can enter and edit this information, which is saved with the prompt.

Play button

When pressed, this button encodes the selected portion of the waveform, sends it to a temporary location on the MRS, and plays it through the selected telephone channel. If no channel has been allocated to the Prompt Manager, the Play button will do nothing.

What is played depends on what is first selected. If you double-click the waveform to select the entire prompt, clicking the Play button will play the complete prompt. If you select only a portion of the waveform, the Play button plays the highlighted segment only. If you select a point on the waveform, the Play button plays from that point to the end of the prompt.

Stop button

When pressed, this button stops the play currently in progress.

Status window

Displays updated information as changes occur during the editing session (for example, identifies selection ranges when an action request is successful).

Edit area

Displays the voice waveform and allows you to interact with it using the mouse. The display within this area will change as editing actions occur.

The edit area is surrounded by scroll bars that allow you to move along the waveform to view or edit other portions of it.

To the left of the scrollable area is a y-axis scale ranging from –100% to +100%. This is the maximum amount of gain (typically +3 dBm) that can be handled by the MRS hardware. Amplitude values greater than these limits will be clipped, and distortion may be heard when playing the prompt.

To modify the gain, select the Adjust Gain option from the Edit pull-down menu. The Prompt Manager displays a pop-up window with a linear slider indicating gain adjustment relative to the current level (the middle position is the current setting at 100%). Moving the slider all the way to the left reduces the gain to total silence, and moving the slider all the way to the right increases the gain to twice the current level.

Using the mouse to edit voice waveforms

The mouse is essential for editing voice files. It allows you to push graphical buttons, grab and slide scroll bars or scales, and select ranges or points within the voice waveform to perform such actions as cut, copy, paste, delete, and gain adjustment. Table 5-1 lists mouse actions and functionality when the pointer is within the Edit area.

Table 5-1: Mouse actions

Mouse button	Action	Functionality
MB1 (mouse button 1)	Click	Selects a point within the waveform
	Double-click	Selects entire waveform
	Drag	Selects a range of the waveform
MB2 (mouse button 2)	Click	Moves the beginning or end of the range to the pointer
	Drag	Extends/modifies the range selected
MB3 (mouse button 3)	None	

Editing a prompt

Use the mouse buttons to select an area to edit. You can select a point, a range, or the entire waveform.

Use the following procedures to edit a prompt.

Editing a single point

To edit a single point in a waveform, follow these steps.

1 Place the cursor at the point in the waveform you want to edit.

2 Click MB1 to select the starting point.

3 From the Edit menu, select an edit function.

Editing a range within a waveform

To edit a range within a waveform, follow these steps.

1 Place the cursor at the beginning of the range within the waveform you will be editing.

2 Click and hold MB1, and drag the cursor to the end of the selected range.

3 From the Edit menu, select an edit function.

Editing an entire waveform

To edit a range within a waveform, follow these steps.

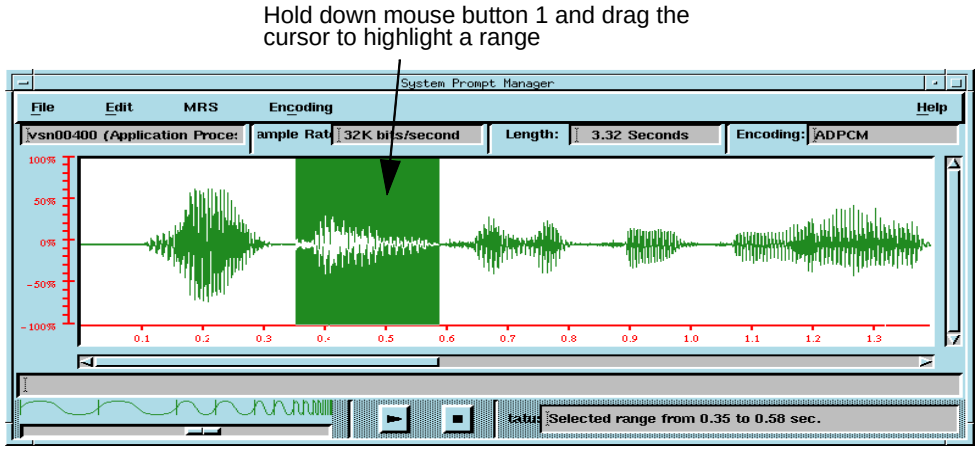
1 Place the cursor on the waveform you will be editing.

2 Double-click MB1 to select the entire waveform.

3 From the Edit menu, select an edit function.

Refer to Figure 5-8 for more details.

Figure 5-8: Editing a prompt



Cutting and pasting the prompt

You can make changes to your prompt by cutting and pasting sections of the prompt to other areas within the waveform. You can select a portion of the prompt and play it back to verify that it is the range you wish to edit. To cut and paste a prompt or a range of a prompts, follow these steps.

To cut or copy a range

1. Place the cursor at the beginning of the range that will be copied or cut.
2. Click MB1 and drag the cursor to the end of the range.
3. Click the “Play” button to verify the comment range that you have selected.
4. From the Edit menu, select `cut` or `copy`.

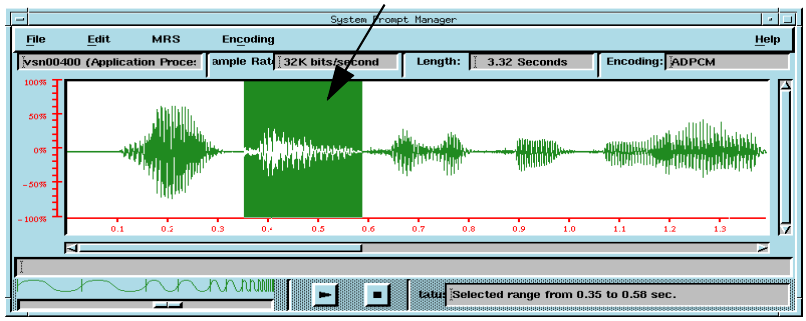
To paste the cut portion back into the prompt

1. Place the cursor at the point where the insertion will take place.
2. Click MB1 to select the insertion point.
3. From the Edit menu, select paste.

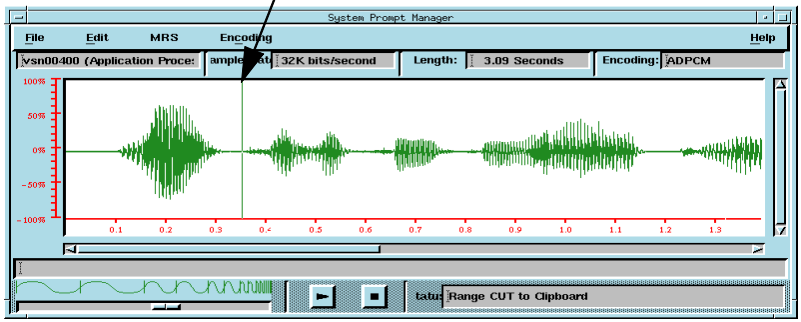
Refer to Figure 5-9 for more details.

Figure 5-9: Cutting and pasting prompts

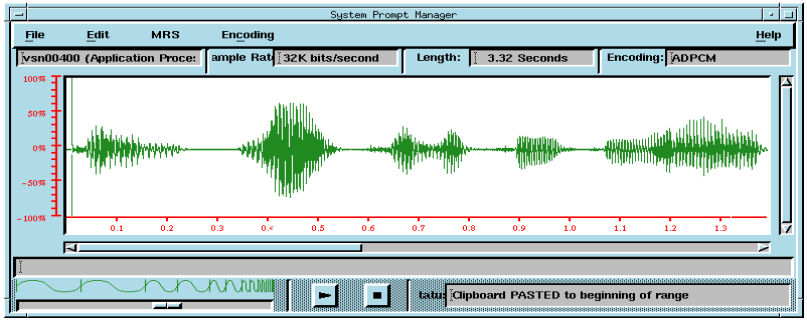
Select the portion of the waveform which is to be cut or copied.



The selected portion is cut from the waveform.



This screen shows the new waveform.



Cutting and pasting from one prompt to another prompt

You can make changes in your prompt by cutting and pasting sections of one prompt to other prompts.

To cut and paste from one prompt to another prompt, follow these steps.

1. Open the prompt from which you wish to cut or copy a section.
2. Click and hold MB1, and drag the cursor over the area you wish to select.
3. Verify that this is the selection you want. Click the play button on the Editor window to play the area you have selected.
4. If this is the correct selection, from the `Edit` menu, choose `Cut` or `Copy`.
5. Check the status of your selection in the status window. Your selection should be in the Clipboard.
6. Close the current prompt.
7. Open the prompt you wish to change.
8. Click MB1 at the point where the selection on the Clipboard is to be inserted.
9. From the `Edit` menu, select `Paste` to paste your selection at this point.
10. Click the play button to play the edited prompt.
11. Make any necessary adjustments to the prompt.
12. From the `File` menu, select `Save`. Repeat these steps as many times as required.

    Note: If you choose a range to paste into the selected waveform, this area is not overwritten. The insertion takes place at the beginning of the range. The rest of the prompt appears after the area you have inserted.

    If you have chosen a point at which to paste the waveform, the insertion takes place after the point you have chosen. The rest of the prompt appears after the section you have inserted.

Using batch mode

You can invoke the System Prompt Manager from the command line or from within a shell script to batch process a prompt. You can then read the prompt in from the application server or the MRS, perform one or more operations on it, and save it back to where it came from. The entire operation happens in the background without opening an X window display. This gives you the flexibility to perform this operation from any terminal type.

Many batch operations are timesavers, since the common functions are performed automatically. For example, it is common to trim silence from newly recorded prompts; with batch mode this can be done automatically.

To run in batch mode, you must do the following:

- Invoke the System Prompt Manager (XPM) from the command line.
- Add a batch mode switch (`-b`) after the command to invoke the System Prompt Manager in batch mode.
- Add a switch that identifies the prompt location (Network Server or MRS) followed by the VSN ID (file name in the application server or number on the MRS).
- Add other switches to indicate the type of processing to be done.

The batch switch must be the first switch immediately after the command to invoke the System Prompt Manager. This allows the System Prompt Manager to bypass all the X/Motif initialization and causes the System Prompt Manager to process the switches listed in this section.

You must supply the prompt to be edited, or no processing can take place. If the prompt is currently on the application server, the prompt is specified by adding the switch `-ap` followed by the full path name, relative path name, or file name in the current directory. If the prompt is currently on the network server, it is specified by adding the switch `-ns` followed by the numerical ID. The default network server used is number 1. Depending on your system's configuration, you may want to edit a prompt on a network server other than this default. To specify a specific server, add the switch `-server` followed by the ID of the network server that you are editing a prompt on.

Note: You should always back up your prompts before performing any batch mode process.

The switches for batch mode are listed in Table 5-2.

Table 5-2: Batch mode switches

Switch	Description
xpm	graphical prompt manager
-h	A list of the switches (help)
-ap <*file name*>	Voice file on the application server
-batch	Batch mode (must be first on the command line)
-ns <*vsn*>	VSN on MRS
-server <*ID*>	The ID of the Network Server where the prompt is to be retrieved
-gain <*0-200%*>	Gain adjust by percentage given
-24K	Compression of 32K ADPCM to 24K ADPCM
-trim <*msecs*>	Silence compression at beginning and end of prompt
-input <*encoding*>	Type of PCM encoding (if prompt is raw)
-output <*encoding*>	PCM encoding (ADPCM, A-law, mu-law)
-comment <*string*>	Insert comment or description string into the prompt
-query	Query the file type and print the information

Note: If a voltage spike, which generates a popping sound, occurs within the first 10 milliseconds of the prompt and is followed by silence, performing a trim operation will remove the spike along with the silence.

Examples of using the batch process operations

You can perform any combination of the following operations on a prompt in a single batch process:

1 Adjust the gain of the entire prompt by a relative percentage factor; the percentage is entered as a number from 0 to 200.

0	Reduce the entire prompt to silence.
50	50% reduction in volume of the original volume (that is, -6 dB adjustment).
100	Current volume of the original prompt (100%).
200	Double the current volume of the original prompt (that is, +6 dB adjustment).

Note: Any adjustments greater than 100 can cause portions of the voice wave to be clipped when you play them at a future time. A warning is displayed in the event that this condition occurs.

2 To increase the gain (volume) of a prompt on the AP by 50%, type the following:

```
xpm -b -ap /usr/OPEN IVR/vfiles.d/vsn00055 -g 150
```

In this example, `vsn00055` is the prompt where the volume increase will take place, `-g` indicates that this will be a gain, and `150` is the percentage of the gain, with 100 being the whole prompt and 50 being the percentage of increase.

If you add `-q` to the end of this statement, a report is printed about this process. The report will look like the following example:

```
$ xpm -b -ap /usr/OPEN IVR/vfiles.d/vsn00055 -g
150
Decompressing data
Gain Adjustment 150%
VSN ID: vsn55 (application server)
VSN Type: ADPCM
Comment Text: Goodbye
Sampling Rate: 32K bits/second
Length: 2.04 seconds
   Compressing linear data
   Waveform saved
```

3 Compress 32K ADPCM to 24K ADPCM. This reduction in sampling rate is available only for ADPCM encoding. This technique is used to reduce the disk storage space by 25%.

Note: There may be a degradation in sound quality.

To compress the sampling rate of a prompt on the Network Server, type the following:

```
xpm -b -ns 55 -24K
```

In this example, 55 is the prompt. There is no need to specify vsn00055 when the prompt resides on the MRS. –24K indicates that 32K ADPCM to 24K ADPCM compression will take place.

If you add `-q` to the end of the statement above, a report is printed about this process. The report will look like the following example:

```
$ xpm -b -ns 55 -24K
Receiving voice from Network Server
Decompressing data
VSN converted to 24K
VSN ID: 55 (MRS)
VSN Type: ADPCM
Comment Text: <NONE>
Sampling Rate: 24K bits/second
Length: 2.05 seconds
```

4 Automatically trim off silence at the beginning and end of a prompt. Silence is defined as a signal that is less than –30 dB of maximum allowed signal (+/– 3 dBm). The number of milliseconds supplied with this switch is the amount of silence to remain immediately before and after the prompt contents. Typical trim values are 100 to 200 milliseconds.

Note: Some silence should be left at the beginning and end of a prompt to avoid popping and clicking noises during prompt concatenation.

To automatically trim silence down to 100 milliseconds from a prompt on the application server, type the following:

```
xpm -b -ap vsn00055 -trim 100
```

In this example, `vsn 00055` is the prompt, and `-trim 100` indicates the amount of silence compression that will take place in the prompt.

If you add `-q` to the end of this statement, you will get a printed report about this process. The report will look like the following example:

```
$ xpm -b -ap vsn00055 -trim 100
Decompressing data
Silence trimmed to 100 msecs.
VSN ID: vsn55 (application server)
VSN Type: ADPCM
Comment Text: <NONE>
Sampling Rate: 64K bits/second
Length: 2.04 seconds
Compressing linear data
Waveform saved
```

5 Insert a comment or descriptive text string to document the prompt contents. This description can be up to 256 characters long and can contain any printable text (the text of the prompt, the type of prompt, its usage, or a short description of the content). The comment must be enclosed in double quotes.

To add a comment to a prompt in the network server, type the following command:

```
xpm -b -ns 55 -c "Thank you... Good-bye!"
```

In this example, 55 is the prompt, -c indicates the insertion of a comment, and "Thank you... Good-bye!" is the comment inserted.

If you add -q to the end of this statement, a report is printed about this process. The report will look like the following example:

```
$ xpm -b -ns 55 -c "Thank you ... Good-bye!"
Receiving voice from Network Server
Decompressing data
Added comment 'Thank you ... Good-bye!'
VSN ID: 55 (MRS)
VSN Type: ADPCM
Comment Text: <Thank you ... Good-bye!>
Sampling Rate: 32K bits/second
Length: 2.04 seconds
Compressing linear data
Shipping voice to Network Server
Waveform saved
```

Using batch mode for a group of VSNs

To use batch mode for a group of VSNs, follow these steps.

1 Back up all files to your directory.

2 Write a script to perform the function of all files in the directory.

Add the following lines to the beginning of any script you write:

```
:
# use /bin/sh bourne shell
```

The following example shows a script for trimming all the prompts in a directory:

```
for name in 'ls vsn*'
do
echo "Editing prompt $name"
../exe/xpm -b -ap $name -trim 100 -q
done
```

While this process is taking place, the following message appears on the screen:

```
Editing prompt vsn00000
Decompressing data
Silence trimmed to 100msecs
Compressing linear data
Waveform saved
Editing prompt vsn00001
Decompressing data
Silence trimmed to 100msecs
Compressing linear data
Waveform saved
•
•
•
```

This message continues for each prompt until the entire group is processed.

Chapter 6: Creating reports

This chapter discusses

- gathering call statistics from your application
- creating reports using these statistics

There are two components to creating a report of the statistics from an AP software application. First, you prepare your application to gather the relevant statistics. Second, you configure the report writer to manipulate these statistics into a useful format.

> ***Note:*** Report Writer and perl executable files are now installed automatically. Therefore, the installation script no longer prompts you to install Report Writer software, as it did in OPEN IVR 2.x. The system does not display any messages about installing Report Writer. You can use the perl executable files to access Report Writer and any other perl software. Access the standard perl software package at the web site *www.perl.com*.

Gathering call statistics from your application

You can use either or both of the following methods to gather statistics in your application:

- Enable the *Call Auditing* parameter from the parameter page in a cell.
- Use EVENT cells to monitor selected cells in your application.

The start of a call activates Call Statistics Gathering in EVENT cells and in any cells in which you enable Call Auditing. As calls move through the application, these cells log information as they execute. The end of the call terminates the gathering of the statistics, and AP software then writes the logged information to the `audit_stat.d` file. The `audit_stat.d` file contains the information gathered for every call that passes through cells you have configured to send statistical information.

The information collected for each *call* with Call Auditing enabled or EVENT cells in the application, or both, includes

- application name
- DID/DNIS
- ANI digits
- channel number
- MRS number
- trunk number
- start date and time of application
- stop date and time of application
- total number of EVENT cells and cells with CALL AUDITING enabled in the application (up to 2 kbytes of data)

The information collected for each *cell* with Call Auditing enabled or an EVENT cell following it includes the following:

- application name (for GSUB and EXEC).
- cell name
- cell number
- comment field contents
- date and time the cell execution completed
- number of buffers containing event-specific information and their contents. You may log a maximum of one buffer when using the Call Auditing parameter, and a maximum of five buffers when using an EVENT cell

Note: AP software can log 2048 bytes of call statistics per call to the `audit_stat.d` statistics file, according to the following formula:

```
[(13 + (string length of buffers)) * the number of
cells audited]  ≤ 2048
```

If you exceed the 2048 byte limit, the system will log an error in the event log stating that the 2048 byte limit was exceeded and any further call statistics will be lost.

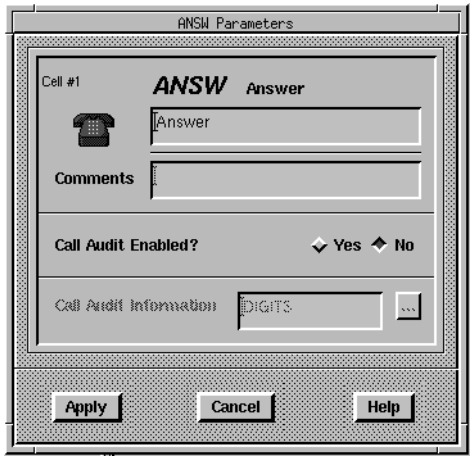
For each cell that is audited (using either the EVENT cell or Call Audit Enabled parameter on any other cell), the amount of data collected per audited cell is

13 bytes + [the number of characters + 1 for each buffer specified (up to 5 buffers in the EVENT cell or 1, representing the Audit Information parameter in any other cell)].

Call Audit Enabled parameter

Every cell in AP software, with the exception of the EVENT cell, includes the parameter `Call Audit Enabled`. Enabling this parameter by `Yes` button for this field tells AP software to gather call information and statistics about that cell and write the information to the `audit_stat.d` file. See Figure 6-1.

Figure 6-1: Call Audit Enabled parameter for the ANSW cell



Once you activate call auditing, AP software will collect the comment field as well as the CALL AUDIT INFORMATION buffer value (this field is grayed out until Call Auditing is enabled) from the designated cells and log these values in the `audit_stat.d` file at the end of the call.

The CALL AUDIT INFORMATION buffer's value is logged once the cell has completed processing.

EVENT cell

You can use the EVENT cell to monitor the following:

- auditing events by gathering statistics
- generating SNMP events

You can gather statistics about a call by using an EVENT cell. By placing an EVENT cell after a call you wish to monitor, the EVENT cell can log application-specific information at these points within your call flow. The EVENT cell automatically logs information like date and time of cell execution, application name, contents of a comment field, and a set of five user-specified buffers containing application-specific information.

By selecting the `Yes` button in the *Generate AUDIT Event?* field. Each call that uses the EVENT cell logs two types of information to the `audit_stat.d` file: data specific to the call (at the beginning and end of the call) and data specific to each EVENT cell encountered (at the end of the call). Use the export tool to export the `audit_stat.d` file and create two ASCII files: `audit_hdrs.asc` and `audit_data.asc`. These files are created in the directory `stat.d`. Refer to the discussion of the export tool in Chapter 9, "Tools," of this guide for additional information about the export tool.

A milestone is an EVENT cell or any cell with its Call Auditing parameter enabled. Through strategic placement of milestones, you can evaluate the performance of your application by examining the elapsed time and number of calls between milestones. Certain reports, such as the Call Audit report, provide this timing information.

By selecting the `Yes` button in the *Generate SNMP Event?* field, you can set SNMP traps for each call that travels through the EVENT cell. Entries in the Event Buffer Table are not separate events. All buffers are combined to create only one event. One SNMP trap is generated in the destination specified in your network management configuration, with the entries concatenated and space delimited.

> ***Note:*** Although using SNMP traps can make AP software a more powerful tool, misusing the EVENT cell can create unnecessary network traffic. Therefore, use this cell only when appropriate and needed. Refer to the *Symposium OPEN IVR 4.0 Cell Catalog* for a description of each parameter in the EVENT cell.

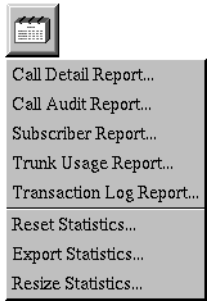
Organizing statistics into reports

AP software provides five different types of reports that organize the call statistics by different criteria. These reports are

- Call Detail Report
- Call Audit Report
- Subscriber Report
- Trunk Usage Report
- Transaction Log Report

You access these reports through the Reports icon on the Symposium OPEN IVR Control Panel. See Figure 6-2.

Figure 6-2: Reports menu



Running a report

Report sources

The data for reports comes from two sources: the Call Audit Process and the Event Logger. The data for the Call Detail, Call Audit, Subscriber, and Trunk Usage reports is collected from the files produced by the Statistics Process. The data for the Transaction Log Report is collected from the file produced by the Event Logger.

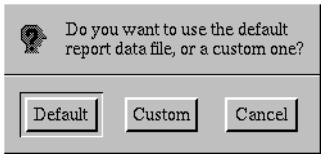
Creating reports

AP software uses a third-party report writer and nedit, a public domain editor, to take information gathered by the AP software call auditing option and organizes it into on-screen reports.

To create one of these reports, follow these steps.

1 Select a report option from the Reports menu.

The following pop-up window is displayed.



2 Choose “Default” or “Custom” to choose the type of report file.

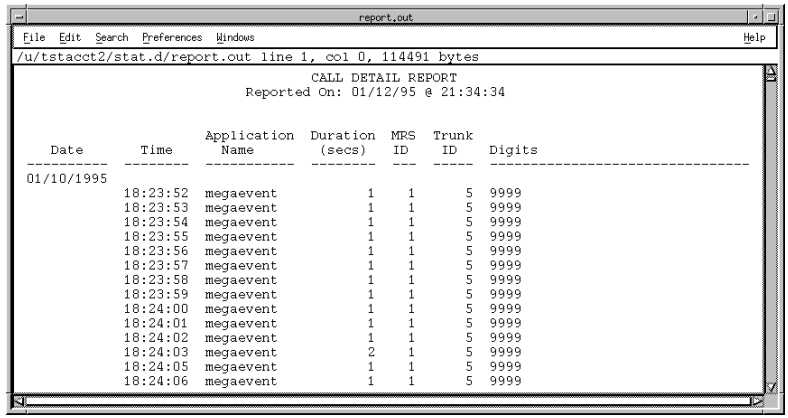
- Select “Default” to generate a report from the report sources, as described in “Gathering call statistics from your application” on page 6-1.
- Select “Custom” to generate a report from a previously saved data source. Selecting “Custom” will bring up a file browser that will let you select a data file to use as the source for the reports.

The following sections provide information on each type of report.

Running the Call Detail Report

The Call Detail Report lists information about each incoming call. It lists the date and time of each call, which application handled each call, the duration of each call in seconds, which MRS and which trunk handled each call, and how many calls your applications received. In addition, if the DID or ANI numbers are available, they will appear in the Digits column. Calls are listed in chronological order. See Figure 6-3.

Figure 6-3: Sample Call Detail Report


report.out
File Edit Search Preferences Windows Help
/u/tstacct2/stat.d/report.out line 1, col 0, 114491 bytes
CALL DETAIL REPORT
Reported On: 01/12/95 @ 21:34:34
Date Time Application Name Duration (secs) MRS ID Trunk ID Digits
01/10/1995
18:23:52 megaevent 1 1 5 9999
18:23:53 megaevent 1 1 5 9999
18:23:54 megaevent 1 1 5 9999
18:23:55 megaevent 1 1 5 9999
18:23:56 megaevent 1 1 5 9999
18:23:57 megaevent 1 1 5 9999
18:23:58 megaevent 1 1 5 9999
18:23:59 megaevent 1 1 5 9999
18:24:00 megaevent 1 1 5 9999
18:24:01 megaevent 1 1 5 9999
18:24:02 megaevent 1 1 5 9999
18:24:03 megaevent 2 1 5 9999
18:24:05 megaevent 1 1 5 9999
18:24:06 megaevent 1 1 5 9999

See the SmartHelp for information on manipulating this report using the nedit editor.

Note: The Call Detail Report must be printed in landscape mode in order to capture all the information. Ensure printer values are modified before printing to meet this requirement.

Running the Call Audit Report

The Call Audit Report lists statistics for the milestone cells in your application. The timestamp for each milestone is logged at the beginning of the call and after completion of each milestone cell. This information is then processed to determine the time between milestone cells for compilation on the Call Audit Report.

The milestone cells are

- all the cells within your application with their Call Auditing parameter enabled and configured
- all EVENT cells in your application

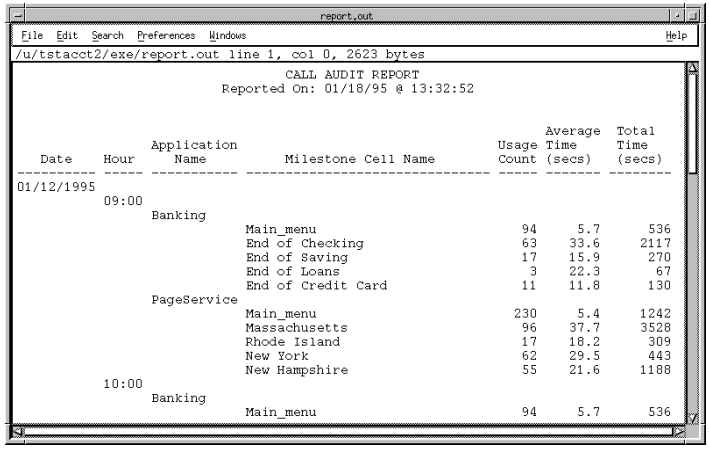
This information lets you see how frequently callers use the various sections of your application, and how much time the callers take in these sections. The Call Audit Report lists the date and hour the call started, the name of the application, the name of each milestone cell, the usage count (the number of times each milestone cell was executed), the average time in seconds between milestones, and the total time in seconds between milestones.

Note: If you enable the Call Auditing parameter in the START cell, it will appear twice per call in the Call Audit Report. This is because it gets executed twice: once at the beginning of the call, and once at the end for cleanup purposes.

To run the Call Audit Report, perform this step.

1 From the Reports menu, select `Call Audit Report`.

The Call Audit Report window is shown. The following report shows a sample Call Audit Report.



CALL AUDIT REPORT
Reported On: 01/18/95 @ 13:32:52

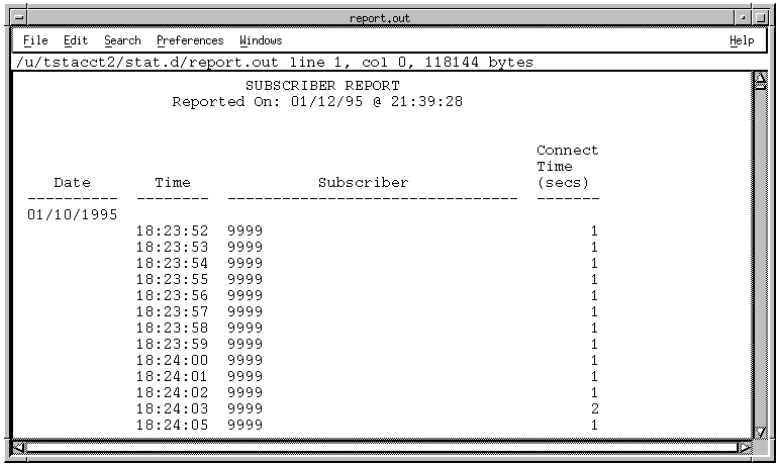
Date	Hour	Application Name	Milestone Cell Name	Usage Count	Average Time (secs)	Total Time (secs)
01/12/1995						
	09:00					
		Banking				
			Main_menu	94	5.7	536
			End of Checking	63	33.6	2117
			End of Saving	17	15.9	270
			End of Loans	3	22.3	67
			End of Credit Card	11	11.8	130
		PageService				
			Main_menu	230	5.4	1242
			Massachusetts	96	37.7	3528
			Rhode Island	17	18.2	309
			New York	62	29.5	443
			New Hampshire	55	21.6	1188
	10:00					
		Banking				
			Main_menu	94	5.7	536

See the SmartHelp for information about manipulating this report using the nedit editor.

Running the Subscriber Report

This report lists information about incoming calls made to DID and ANI trunks. The report shows the date and time that each call was made, the DID or ANI number that was called (Subscriber), and the time in seconds that the call lasted (Connect Time). See Figure 6-4.

Figure 6-4: Sample Subscriber Report



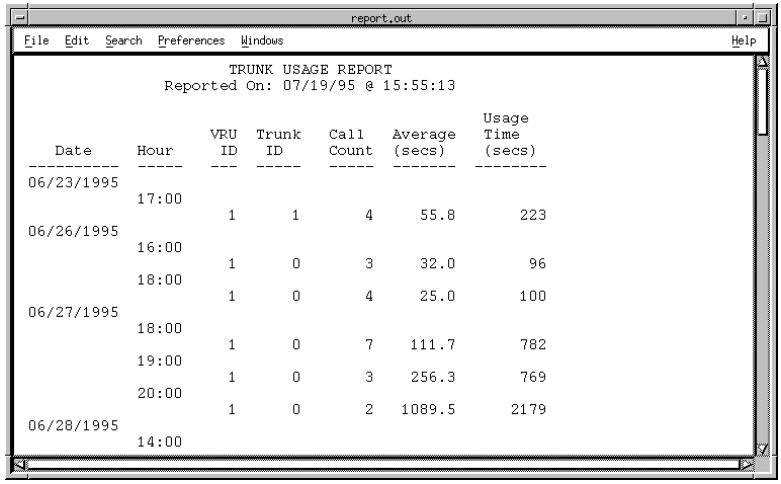
For more information on DID and ANI trunks, see “Configuring trunks” on page 2-21 of this guide.

See the SmartHelp for information on manipulating this report using the nedit editor.

Running the Trunk Usage Report

The Trunk Usage Report details trunk activity for incoming calls. It is organized by date and hour, then MRS number and trunk number. For each trunk, the Trunk Usage Report lists the number of calls the trunk processes, the average time in seconds per call, and the total number of seconds the trunk was in use that hour. This information allows you to see which of your trunks are handling the most calls. See Figure 6-5.

Figure 6-5: Sample Trunk Usage Report


report.out

File Edit Search Preferences Windows Help

TRUNK USAGE REPORT
Reported On: 07/19/95 @ 15:55:13

Date	Hour	VRU ID	Trunk ID	Call Count	Average (secs)	Usage Time (secs)
06/23/1995						
	17:00					
		1	1	4	55.8	223
06/26/1995						
	16:00					
		1	0	3	32.0	96
	18:00					
		1	0	4	25.0	100
06/27/1995						
	18:00					
		1	0	7	111.7	782
	19:00					
		1	0	3	256.3	769
	20:00					
		1	0	2	1089.5	2179
06/28/1995						
	14:00					

See the SmartHelp for information on manipulating this report using the nedit editor.

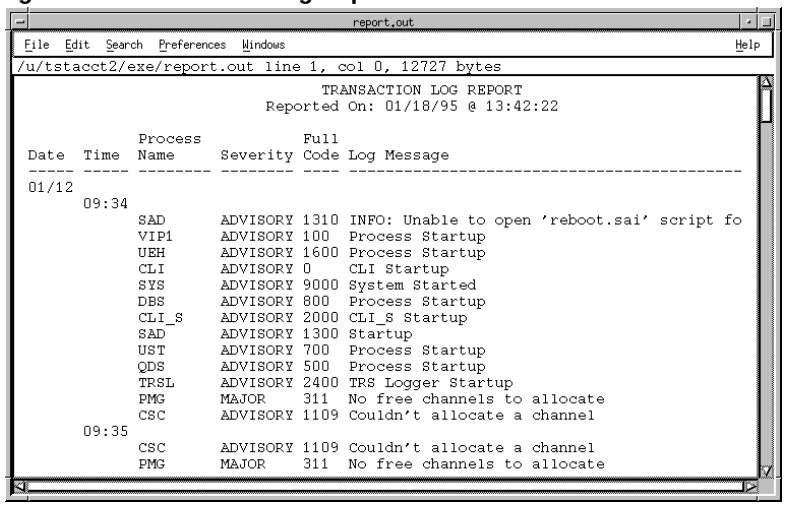
Running the Transaction Log Report

The Transaction Log Report provides information about the system and the resources. You can use the Transaction Log Report as a tool for diagnosing errors that occur while AP software is running.

The Transaction Log Report lists the date and time of events, the process that generated the event, the severity level (see the error codes and severity levels section in Chapter 7, "Monitoring the system"), the event code (refer to the *Symposium OPEN IVR 4.0 Error Messages Guide)*, and the log message itself. See Figure 6-6.

AP software processes generate system events at various times. The Transaction Log Report can record the 300 most recent events. New entries entered in the log overwrite the oldest messages.

Figure 6-6: Transaction Log Report


report.out
File Edit Search Preferences Windows Help
/u/tstacct2/exe/report.out line 1, col 0, 12727 bytes
TRANSACTION LOG REPORT
Reported On: 01/18/95 @ 13:42:22
Date Time Process Name Severity Full Code Log Message
01/12
09:34
SAD ADVISORY 1310 INFO: Unable to open 'reboot.sai' script fo
VIP1 ADVISORY 100 Process Startup
UEH ADVISORY 1600 Process Startup
CLI ADVISORY 0 CLI Startup
SYS ADVISORY 9000 System Started
DBS ADVISORY 800 Process Startup
CLI_S ADVISORY 2000 CLI_S Startup
SAD ADVISORY 1300 Startup
UST ADVISORY 700 Process Startup
QDS ADVISORY 500 Process Startup
TRSL ADVISORY 2400 TRS Logger Startup
PMG MAJOR 311 No free channels to allocate
CSC ADVISORY 1109 Couldn't allocate a channel
09:35
CSC ADVISORY 1109 Couldn't allocate a channel
PMG MAJOR 311 No free channels to allocate

See the SmartHelp for information on manipulating this report using the nedit editor.

> ***Note:*** The Transaction Log Report must be printed in landscape mode to capture all the information. Ensure printer values are modified before printing to meet this requirement.

Resetting statistics

You must start AP software before you can use the Reset Statistics tool to reset statistics.

To reset statistics, follow this step.

1 From the Control Panel Report menu, select `Reset Statistics`.

The system resets the statistics. AP software automatically backs up your file to `audit_stat.d.b` when you select the `Reset Statistics` option.

Note: You can also reset statistics by typing **`rstat`** at the prompt in the directory `exe`.

Exporting statistics data

The statistics export tool reads the statistics file (typically `audit_stat.d` file in the AP software `stat.d` directory) and exports the data into two ASCII files in the `stat.d` directory: `audit_hdrs.asc` for call header records and `audit_data.asc` for cell data records. The data is stored in these files as comma-separated fields, suitable for importing into databases or programs.

To invoke the Export tool, follow these steps.

1 From the `stat.d` directory, enter the following command:

`exp -e audit_stat.`

or click the Control Panel Report button and select Export.

The Default button accesses the `audit_stat.d` file. The Custom button allows you to choose the statistics file (from a backup file, for example).

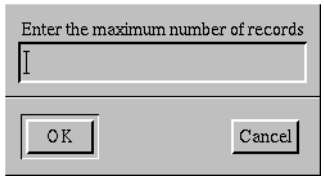
You may want to use the `statsbkup` tool to back up the data before exporting.

Resizing statistics

When the `audit_stat.d` file is full, the incoming information wraps around, overwriting earlier data. You can change the size of the statistics file so you can increase the amount of data saved before the file wraps.

1 From the Control Panel Reports menu, select `Resize Statistics`.

The following window is displayed.



You can increase the size of the `audit_stat.d` file to any size you need, up to 2 147 483 648 records in size. Each record takes 252 bytes, and the file header takes 20 bytes. Make sure you have sufficient disk space for the number of records you wish to save.

Whether you increase or decrease the size of your statistics file, some data will be lost.

Note: Be sure you back up your files before resizing to avoid losing data.

Backing up your statistical information

Since files in the `stat.d` directory are limited in size, when a file is full, the incoming information wraps around, overwriting the original data, which is then lost. You can use the `statsbkup` tool to copy statistical information from the files in the `stat.d` directory to another file of your choice to avoid losing this information. See Chapter 9, "Tools," in this guide for information on using the `statsbkup` tool.

Note: Incorporating `-r` in the command line of the `statsbkup` tool will delete the contents of the `audit_stat.d` file once the backup is complete. This should be done to ensure the original `(audit_stat.d.)` and the backup `(audit_stat.d.b.)` files match.

Use the AP software Backup Tool or the UNIX tool, `cron`, to perform backups of the `audit_stat.d` file automatically.

Creating a customized report

Contact your Nortel sales representative for information about obtaining a report customized for your company.

Chapter 7: Monitoring the system

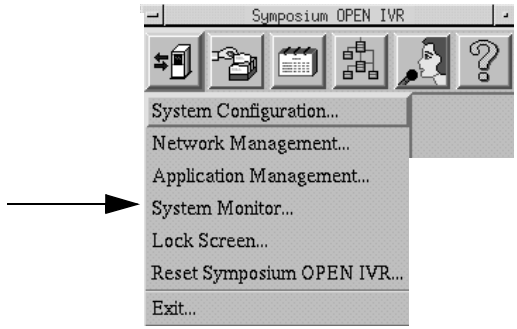
AP software enables you to monitor your voice system and AP configuration by using the graphical system monitor. In addition, you can track the execution path of any application that you indicate. The two options available for system monitoring are

- the System Monitor, accessed from Administration tools on the Control Panel, which tracks the current status of disk space and channel activity
- the System Application Monitor (SAM), accessed from a system shell, which tracks an application

Accessing the System Monitor

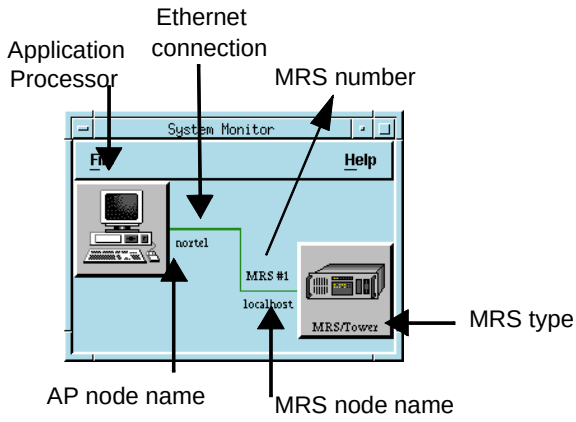
To access the System Monitor, follow these steps.

1 From the Symposium OPEN IVR Control Panel, click the Administration button, and select `System Monitor` from the menu.



AP software displays the System Monitor window, similar to the one shown in Figure 7-1.

Figure 7-1: System Monitor window



The window displays your system components and gives you real-time information about each channel.

The following information is displayed in the System Monitor window:

Menu bar

Contains File and Help options. Select these to access pull-down menus of related functions.

Application Processor

Identifies the computer on which AP software is running.

AP node name

Indicates the application server node name, which consists of the hardware type and the name by which the node is known on the network. The illustration in Figure 7-1 shows “nortel” for the node name.

MRS node name

Denotes the MRS ID, consisting of a numerical ID and its address. If the control link is Ethernet, its address is the name by which the node is known on the network. If the control link is RS-232-C, it is the name of the device by which the serial port is known on the application server. The illustration in Figure 7-1 shows “localhost” for the MRS node name.

Ethernet connection

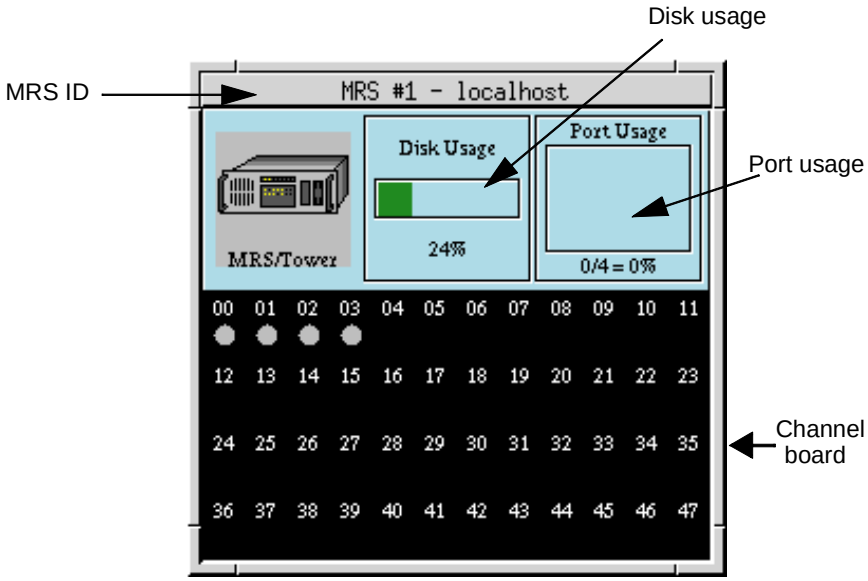
In the administration window, an Ethernet control link is represented by a straight line; an RS-232-C connection is represented by a lighting bolt. In Figure 7-1, the MRS #1 known as “localhost” has an Ethernet connection.

MRS type

The MRS type toggle button shown in Figure 7-1 is displayed for each MRS telephony server. When you click one of these toggle buttons, a window appears that graphically shows the activity on the selected MRS in real time. The window includes the MRS ID, its type, the percentage of total available disk storage currently used, the percentage of total configured trunks currently used, and a status light for each telephone line. The status lights indicate whether a channel is on-hook, off-hook, or unavailable for incoming calls. Clicking the same MRS toggle button again closes the window.

For example, clicking the MRS type toggle button in Figure 7-1 displays the dialog window shown in Figure 7-2. Clicking the same toggle button closes the MRS dialog window.

Figure 7-2: Sample MRS dialog window



As you view the MRS dialog window, the lights and port usage and disk usage displays change to reflect the activity on the MRS. Figure 7-2 shows that channels 01 to 03 are actively processing inbound calls.

The MRS dialog window displays the following information:

MRS ID

Identifies the telephony server type. In Figure 7-2, the telephony server is an MRS Tower.

Disk Usage

Indicates the current disk usage on the server, expressed as a percentage used of all disk space currently available. This value is updated each time the dialog window appears, at the beginning of the hour, or when the disk is nearly full.

Port Usage

Indicates the current port usage on the server, expressed as a percentage used of all configured ports. This value is updated every five seconds. The graphics maintains a strip-chart history for approximately the last five minutes.

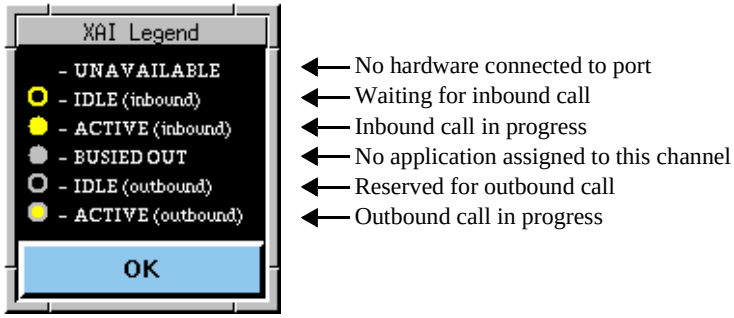
Channel board

Displays a simulated board of lights for each channel on the MRS. Refer to Figure 7-3, which displays the trunk states.

- **No light on channel port** Designates an unavailable trunk; the trunk is not configured or does not exist in the system. Either way, an in-bound call can never be accepted.
- **Yellow ring light channel port** Indicates that the trunk is idle and waiting for an inbound call and that the application is loaded.
- **Solid yellow circle channel port** Indicates that the trunk is actively processing an inbound call.
- **Solid gray circle channel port** Indicates that no application has been loaded on the channel.
- **Gray ring light channel port** Indicates that the channel is reserved for outdialing.
- **Gray ring light surrounding solid yellow circle channel port** Indicates that a directed outdial is in process.

Figure 7-3 shows the trunk states. This pop-up window is available by selecting `Legend` from the `Help` pull-down menu on the Main Menu bar.

Figure 7-3: Six trunk states



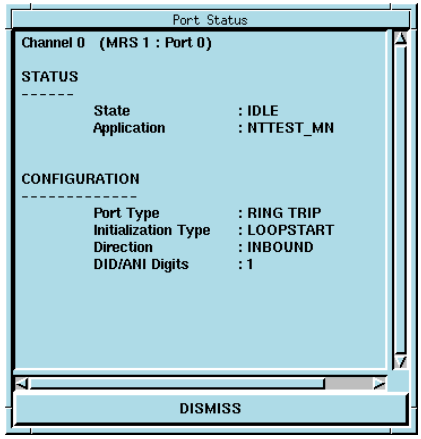
Showing port status

To show the port status, follow this step.

1 From the MRS Dialog window, click MB1 on any port light (shown in Figure 7-3), to view the corresponding detailed status window for that port.

Figure 7-4 shows the Port Status window, which contains a detailed snapshot of the activity on that port. The Port Status window shows all configuration parameters set in the system configuration for the selected port.

Figure 7-4: Port Status window



The fields in the Port Status window are listed in Table 7-1.

Table 7-1: Port Status fields

Field	Description
Channel ID	Channel number on the application server.
MRS ID	MRS containing this port
Port ID	Trunk number on the MRS
Status	
State (of the port)	Possible states are • unavailable • idle • active • busied out • idle outdial • active outdial
Application	Application that is currently loaded, if any, and the ID number that was assigned to the application by the OPEN IVR process when the application was loaded.
Configuration	
Port type	Identifies the type of port in the configuration, such as a Ring Trip, DID or ANI.
Initialization Type	Possible initialization types may be • Loopstart • DID • ANI
Direction	Indicates whether port is set to inbound, outbound or web.
DID/ANI Digits	Specifies the number of DID/ANI digits required to activate the system.

Figure 7-4 illustrates the expanded Port Status window to show the location of the cell number.

Closing the Port Status window

To close the Port Status window, click the Dismiss button at the bottom of the pop-up window.

Updating the contents of the port status window

While the Port Status window is visible, you can update its contents by clicking a port on the channel board. You can click any port on any MRS channel board to view its status, or you can click the same port repeatedly to monitor progress through an application.

Using the System Application Monitor

The System Application Monitor (SAM) is a stand-alone process that you can use to log user activity while an application is running on one or more channels, and to track the execution path of the application. If necessary, you can run SAM for multiple applications simultaneously.

Three levels of information are provided by SAM. The outer level contains the following information:

- **Chan** Identifies the channel on which the cell is executed.
- **Cell** Indicates the type and number of the cell that is executed (for example, PLAY, MENU).

The second level contains the following types of information:

- **Type of Reply** Identifies the type of call and the status of the application at the point that this line appears (possible replies are VCS, Voice Call Service; DBS, Database; QDS, SQL database; TRS [Terminal Resource Server], Host connection).
- **Application** The name and ID of the application being processed.
- **Cell** The Cell ID number.

The third level of data lists buffer numbers and their contents, if any. Any extra data included appears indented. This data can include

- **Input Digits** The input number the user enters to enable this part of the application.
- **Digits Length** The number of digits that the input contains.
- **Confidence Level** Represents the confidence in the returned values represented as a percentage. The confidence level is associated with speech recognition.
- **Digits received by the application** The input number for this application.
- **Password** If applicable, is usually associated with a mailbox application.
- **Name ID** If applicable, is usually associated with a mailbox application.
- **Greeting ID** If applicable, is usually associated with a mailbox application.
- **Total msgs** If applicable, is usually associated with a mailbox application.
- **New msgs** If applicable, is usually associated with a mailbox application.
- **Buffer*XX* (*XX* = buffer number)** Provides the contents of the displayed buffer.

Typically, you use SAM to monitor a call, tracing the transition from cell to cell and identifying the data that the caller selects.

> ***Note:*** Although you can monitor multiple channels, it is recommended that you run SAM on only one channel at a time to avoid degrading system performance.

Invoking the System Application Monitor (SAM)

To invoke SAM and direct output to a file, follow these steps.

1 Type the following command at the shell prompt:

sam -f *filename* -lo *low_channel_num* -hi *high_channel_num* -v

or, for display to the shell window, type the following command:

sam -lo *low_channel_num* -hi *high_channel_num*

where

filename identifies the name of the file where you want SAM to log the information. The default file name is `sam.out` in the current directory.

low_channel_num indicates the low end of the channel range you want to monitor. If you do not specify a number, SAM defaults to 0.

high_channel_num indicates the high end of the channel range you want to monitor. If you do not specify a number, SAM defaults to 0.

v indicates "verbose" mode to display detailed information.

Example

If you want to log an application called `V-Mail` running on channel 2, perform the following steps.

To invoke SAM to start logging the channel, follow these steps.

1 Type the following command at the shell prompt:

sam -f -lo 2 -hi 2

In this case, SAM logs user activity in the default file `sam.out`. A sample log follows the note.

Note: If you do not supply a file name after -f, the default sam.out is created. To specify a different file name, type the following command at the shell prompt:

sam -f *filename* -lo 2 -hi 2

2 To display SAM output to a screen, enter the following command at the shell prompt:

```
sam -lo 0 -hi 0
```

The following information is displayed:

```
*** SAM Trace Started on channels 0 to 0 ***
Chan0:VCS REPLY= NEW CALL/ STATUS= OK
Chan0: Cell2: ANSW - Appl: V-MAIL (ID  1)
Chan0: Cell3: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0:Input Digits= 7972
Chan0:Digits Length= 4
Chan0:Confidence Level= 0
Chan0:Digits received by application = ‘7972’
Chan0: Cell4: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/STATUS= TIMEOUT
Chan0:Digits received by application = ‘’
Chan0: Cell  21: CHEK - Appl: V-MAIL (ID  1)
Chan0:DBS REPLY= CHECK/STATUS= INVALID ID
Chan0: Cell  24: HANG - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: Cell  25: HANG - Appl: V-MAIL (ID  1)
Chan0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: END OF APPLICATION
Chan0:VCS REPLY= NEW CALL/ STATUS= OK
Chan0: Cell2: ANSW - Appl: V-MAIL (ID  1)
Chan0: Cell3: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0:Input Digits= 7972
Chan0:Digits Length= 4
Chan0:Confidence Level= 0
Chan0:Digits received by application = ‘7972’
Chan0: Cell4: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0:Input Digits= 55
Chan0:Digits Length= 2
Chan0:Confidence Level= 0
Chan0:Digits received by application = ‘55’
Chan0: Cell5: COMP - Appl: V-MAIL (ID  1)
Chan0: Cell  26: GDAT - Appl: V-MAIL (ID  1)
```

```
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0:Input Digits= 7972
Chan0:Digits Length= 4
Chan0:Confidence Level= 0
Chan0:Digits received by application = ‘7972’
Chan0: Cell6: MSGS - Appl: V-MAIL (ID  1)
Chan0:   DBS REPLY= GET HEADER   /STATUS= MBOX
CREATED
Chan0:Password    =
Chan0:Name ID     = 0
Chan0:Greeting ID = 0
Chan0:Total msgs  = 0
Chan0:New msgs    = 0
Chan0:   DBS REPLY= UPDATE HEADER /STATUS= DBS
SUCCESS
Chan0: Cell9: HANG - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONESTATUS=OK
Chan:0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: Cell  25: HANG - Appl: V-MAIL (ID  1)
Chan0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: END OF APPLICATION
Chan0:VCS REPLY= NEW CALL/ STATUS= OK
Chan0: Cell2: ANSW - Appl: V-MAIL (ID  1)
Chan0: Cell3: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS= OK
Chan0:Input Digits= 7972
Chan0:Digits Length= 4
Chan0:Confidence Level= 0
Chan0:Digits received by application = ‘7972’
Chan0: Cell4: GDAT - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= PLAY DONE/ STATUS=TIMEOUT
Chan0:Digits received by application = ‘’
Chan0: Cell  21: CHEK - Appl: V-MAIL (ID  1)
Chan0:DBS REPLY=CHECK/ STATUS=DBS SUCCESS
Chan0:Buffer00 = 7972
Chan0:Buffer01 =
Chan0:Buffer02 =
Chan0:Buffer03 =
Chan0:Buffer04 =
Chan0:Buffer05 =
Chan0:Buffer06 =
Chan0:Buffer07 =
```

```
Chan0:Buffer08 =
Chan0:Buffer09 =
Chan0: Cell  22: MSGS - Appl: V-MAIL (ID  1)
Chan0:DBS REPLY=GET HEADER/ STATUS=NO MSGS
Chan0:Password= 7972
Chan0:Name ID= 0
Chan0:Greeting ID = 0
Chan0:Total msgs  = 0
Chan0:New msgs= 0
Chan0: Cell  23: COMP - Appl: V-MAIL (ID  1)
Chan0: Cell7: RMSG - Appl: V-MAIL (ID  1)
Chan0:VCS REPLY= RECORD DONE/STATUS= ERROR
Chan0:VSN Recorded    = 13839
Chan0: Cell  11: HANG - Appl: V-MAIL (ID  1)
Chan0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: Cell  25: HANG - Appl: V-MAIL (ID  1)
Chan0: Cell0: DFLT - Appl: V-MAIL (ID  1)
Chan0: END OF APPLICATION
```

Exiting the System Application Monitor (SAM)

Once you invoke SAM, it continues to run on the specified range of channels until you enter the appropriate control sequence to terminate the process.

To exit the SAM, follow this step.

1 Press <Delete> to terminate the process.

At this point, SAM stops writing channel activity data to *filename,* or outputting to the shell window, and returns control to the shell.

Printing the SAM log

The log generated by SAM is an ASCII file. Printing the SAM log is system-specific.

AP software severity file

This section provides information about the OPEN IVR severity file. This section contains the following subsections:

- Overview
- Modifying severity classes
- Modifying individual error messages

CAUTION

Risk of data loss

Because you can edit the severity file directly, you risk corrupting the file. If the file is corrupt, AP software sets an SNMP trap.

Overview

The AP software severity file defines all error messages that are associated with AP software. You can use the severity file to define an optional UNIX command for severity classes as well as to specify actions and severity levels for individual error messages. When an event occurs, the error message that is associated with the event is logged to the file `event.log` by the User Error Handler (UEH).

> ***Note:*** The severity file replaces the alarm file from previous versions of AP software.

The severity file can be used for the following:

- You can use the severity classes in the first section of the severity file to define an optional UNIX command for all messages that are associated with an entire severity class.
- You can use the action indexes in the second part of the severity file to map specific system-supported actions to specific error messages and to map individual error messages to a particular severity class.

Figure 7-5 displays an example of the severity file.

Figure 7-5: Example of severity file

```
#ERROR  ACTION
#CODE   INDEX  MESSAGE STRING
------  ------ --------------

1105   0x0503 # CSC_BAD_INIT_CLI: Couldn't initiate link with CLI
1106   0x0200 # CSC_BAD_INIT_UTM:  Couldn't initiate link with UTM
1107   0x0503 # CSC_CANT_READ_MAIL:  Error reading message queue, errno=%1d
1108   0X0301 # CSC_ERR_CLI_CMD:  Unknown CLI command:  0X%X
1109   0x0100 # csc_no_channel:  Couldn't allocate a channel
1110   0x0301 # CSC_ERR_NO_CLI_MSG:  Couldn't send cmd 0X%X to CLI, errno=%1d
1111   0x0100 # CSC_APPL_NOT_LOAdED:  Application is not LOADED.
1112   0x0100 # CSC_APPL_INVK_FAIL:  Could not invoke application
1113   0x0301 # CSC_NO_MORE_MEMORY:  Couldn't allocate memory for event
1114   0X0301 # CSC_NO_MORE_REQS:  No more request ids, event not scheduled
1200   0x0100 # PLF_START:  Process startup
1201   0x0100 # PLF_SHUTDOWN:  Process shutdown
```

You can use a text editor such as vi or nedit to edit the severity file. The severity file for country languages is located in the directory `/u/nortel/ui_lang/en_US/severity.rsp`. Any modifications must be made to this file. You need to stop AP software and restart the system in order for any modifications to the severity file to be invoked.

You can access a sample severity file in the directory `/u/nortel/user_data/severity.rsp`. This is an example file only.

.

CAUTION

Risk of accessing incorrect error data

If you edit the severity file, you risk unpredictable behavior in displaying error messages. Make a copy of the severity file before you modify this file.

Modifying severity classes

You can use the severity level associated with a class of error message to make informed decisions about a generated event. For example, the severity class ADVISORY informs you that a log event occurred and that no action is required. An event associated with the severity class FATAL, however, generally requires you to take action.

This section provides information about the following columns of the first section of the severity file:

- KEY
- LEVEL
- STRING
- ACTIONS

KEY

The value MAP is the default setting for the KEY column. Do not edit the KEY column because AP software uses the value MAP to define optional UNIX commands with severity classes.

LEVEL

The numerical values in the Level column correspond directly to severity classes listed in the STRING column. For example, the value 1 is associated with the severity class ADVISORY, and the value 2 is associated with the severity class MINOR.

STRING

The STRING column lists severity classes that are supported by AP software. Table 7-4 lists the severity classes that are supported by AP software and provides a description of the default action for each severity class.

Table 7-2: Severity class default actions

Severity class	Default action description
ADVISORY	No default action is specified.
MINOR	No default action is specified.
MAJOR	Sends an SNMP trap to the NMS.
CRITICAL	Sends a trap to the NMS and displays a console message.
FATAL	Sends a trap to the NMS and displays a console message.

ACTIONS

You can use the default behavior that is associated with a particular severity class or provide your own action for all messages that are associated with a severity class in the form of a UNIX command between the quotation marks (“ ”) in the `ACTIONS` column. For example, you could define a UNIX command to send mail to the system administrator when a FATAL event, such as a machine that is down, occurs.

Modifying individual error messages

The second section of the severity file maps each individual error message to a hexadecimal action index value. The action index specifies both the set of actions to be taken for the event when it occurs as well as the severity class to which this event belongs.

This section contains information about the following columns in the second section of the severity file:

- Error code
- Action index
- Message string

Error code

Each AP software error message is associated with a specific error code. Do not edit the error code.

Action index

This section provides information about action bit flags and action indexes. The action bit flag is a hexadecimal value in the action index that specifies which action bits are enabled and which are disabled. You can use the action index to map an action to specific messages without applying the action to the entire severity class. The action bit flag value determines whether or not the associated error code generates one or a combination of the following actions:

- SNMP trap
- Console action
- Minor alarm
- UNIX command

Table 7-3 provides a description of each action executed by each bit position when the bit is enabled.

Table 7-3: Action bits

Enabled bit position	Action	Description
0	SNMP trap	Event is sent to the NMS accepting SNMP traps.
1	Console message	Message is displayed in the AP software console.
2	Minor alarm	Turns on AP software minor alarms.
3	UNIX command	Invokes the UNIX command specified in the column `ACTIONS`.

The action index is a hexadecimal value that specifies the severity class and the action bit flag of a particular error code. The format for the action index is as follows:

`0x`*`SSAA`*

where the value `0x` indicates that the action index is a hexadecimal value, the value *SS* indicates the severity class of the error, and the value *BB* indicates the action bit flag associated with the error.

> ***Note:*** To interpret the action bit flag, convert the value from hexadecimal to binary, and correspond the position of any fields containing a 1 (indicating an action bit flag is enabled) to the error message.

Table 7-4 displays the default action hexadecimal value as well as a description of the action for each of the severity classes.

Table 7-4: Severity class default action indexes

Severity class	Default action index	Default action description
ADVISORY	0x0100	No default action is specified.
MINOR	0x0200	No default action is specified.
MAJOR	0x0301	Sends an SNMP trap to the NMS.
CRITICAL	0x0403	Sends a trap to the NMS and displays a console message.
FATAL	0x0503	Sends a trap to the NMS and displays a console message.

The following examples illustrate the values included in the format of the action index.

The action index `0x0305` is comprised of the following values:

- The value `0x` indicates that the action index is a hexadecimal value.
- The value `03` indicates that the severity class is MAJOR.
- The value `05` indicates that the system will generate an SNMP trap and will activate minor alarms. The hexadecimal value `05` converts to the binary value `0101` and indicates that the bits in the zero and second position are enabled, and the bits in the first and third positions are disabled.

The example action index 0x050B is comprised of the following values:

- The value 0x indicates that the action index is a hexadecimal value.
- The value 05 indicates that the severity class is FATAL.
- The hexadecimal value 0B indicates that the system will generate an SNMP trap and a console message as well as execute a user-defined UNIX command string. The hexadecimal value 0B converts to the binary value 1011 and indicates that the bits in the zero, first and third positions are enabled, and that the bit in the second position is disabled.

Message string

You can also provide a message string to provide information about the error message when an event occurs. The system displays the text that you enter in the column MESSAGE STRING in the AP software console and the OA&M Configure Events management application console. When a log event occurs, AP software adds the text string to the file $VOICE_HOME/log.d/event.log and executes the action specified in the action index.

Chapter 8: Using SNMP with OPEN IVR

Introduction

In a situation where a corporation uses extensive LAN or WAN, centralized management of every network node can become an overwhelming task. In these situations, simple network management protocol (SNMP) keeps a central management workstation apprised of the status of all SNMP compliant nodes on the network by notifying the management workstation of major events.

If your AP and MRS are installed on a network, AP software can send SNMP events to a central workstation and keep it apprised of AP software events.

For more information on SNMP

For more information on any of the SNMP topics discussed in this chapter, refer to the *SCO Open Desktop/SCO Open Server Administrator's Guide Operating System, Networking, and DOS Services Guide.*

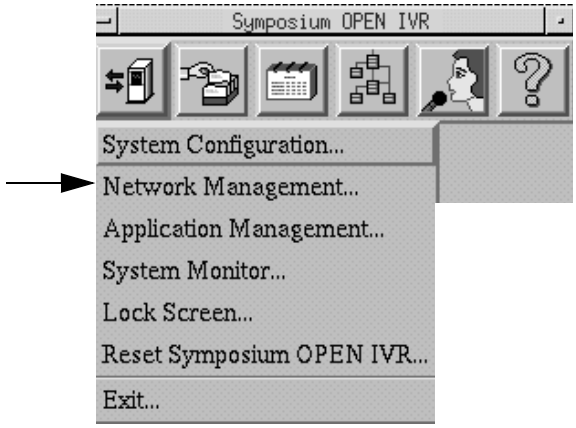
Installing SNMP

Refer to SCO documentation for instructions on installing SNMP.

Configuring SNMP on the AP or MRS/AP

To access AP software's SNMP configuration utility, follow this step.

1 Select `Network Management` from the `Administration tools` menu on the Control Panel.



You can configure AP software to designate an SNMP event destination by either of the following methods:

- Access the `Network Management` option from the `Administration tools` menu from the Control Panel.

  Note: If you need to access the network management `config` file through a character cell interface, edit the `$VOICE_HOME/sys_files/netmgmt.conf` file with the following colon-separated string format:

  `<destination>:<community string>:<retries>:<timeout>`

- Access the `Network Configuration` menu directly by executing the `gnetconfig` command.

Configuring the reporting of AP software event to a management platform

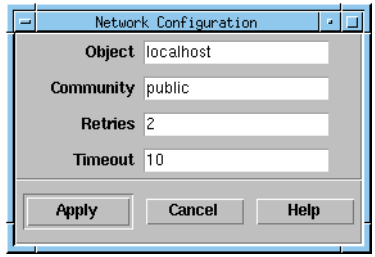
To configure the reporting of AP software events to a management platform, do the following:

- Configure the destination.
- Determine which AP software events generate SNMP events.

To configure the destination, follow these steps.

1 Select Network Management either by selecting the option from the `Administration tools` menu or by executing the `gnetconfig` shell command.

The Network Configuration window is displayed.



2 Enter the name or IP address of the management platform in the *Object* field. You must be able to access the object name that you enter in this field.

Note: If you enter a name for the management platform, ensure either that the name is included in the `/etc/hosts` file or that the name is identifiable in your name server.

3 Enter the access string of the management platform in the *Community* field.

Note: This string acts as a type of password so that the Agent and Manager can identify each other and know that it is “safe” to communicate. The individual responsible for overseeing your SNMP network can provide you with this string.

4 Click the Apply button.

If the entries and syntax that you enter in the fields are not correct, an error dialog box is displayed.

Note: The default values for the *Retries* and *Timeout* fields do not require modification.

AP software generates the following types of events:

- fatal conditions, which are not configurable
- console actions in the `severity` file, which are configurable on a user-by-user basis
- event cells, which are user-configurable

Configuring the management platform

Provide this information to the individual responsible for configuring the management platform:

Nortel OID	1.3.6.1.4.1.1116

Three subclasses of enterprises are produced:

VTORB OID	1.3.6.1.4.1.1116.1
AP software OID	1.3.6.1.4.1.1116.2
MRS software OID	1.3.6.1.4.1.1116.3

In order to use SNMP traps, you must have a node on your network running IBM Netview on the AIX operating system. Refer to the *NetView for AIX Programmer's Guide* for additional information about using SNMP traps. Error messages associated with the severity classes MAJOR, CRITICAL, and FATAL send SNMP traps to the Network Management System (NMS) as a default action. In order to modify these default settings or to modify other error messages to generate SNMP traps, edit the severity file. See "AP software severity file" on page 7-14 for additional information on modifying the severity file.

Configuring SNMP on the MRS

You can enable communication with the management host by using the `snmp` option on the `/sci/config` menu.

Enabling SNMP service allows severity level errors to be trapped and forwarded to the management host.

> ***Note:*** The management host does not have to be the AP. However, an entry in the `hosts` file must be included for the SNMP management host. (List the contents of the hosts file by using the `list` option from the `/sci/admin/hosts` menu.)

If you reenable SNMP services, you must reset the MRS software (use the `reset` option from the `/sci` menu) for this to take effect.

Table 8-1 lists the prompts to which you must respond.

Table 8-1: SNMP configuration parameters

Parameter	Value	Description
Service Flag	ON/OFF	Enables/disables communication with the SNMP management host.
Network Entity	IP address or name of the SNMP management host	Identifies the management host.
Community String	password	Allows access privileges to the management host.
Retry Value	number	Specifies the number of times the MRS will attempt to send a message to the management host if a failure occurs.
Timeout Value	number	Specifies the allowable time (in seconds) between attempts to send a message to the management host.

The following example enables SNMP services. The management host is named “localhost” and the password is “public” in this example.

```
/sci/config> snmp
Current SNMP Service Flag = off
on          - Enable SNMP Service
off         - Disable SNMP Service
        SNMP Service Flag = on
Default Destination hostname or IP address =
localhost
        Destination hostname or IP address =
Default Community String = public
        Community String =
Default Retry Value = 2
        Retry Value =
Default Timeout Value = 10
        Timeout Value =

/sci/config> snmp
Current SNMP Service Flag = on
on          - Enable SNMP Service
off         - Disable SNMP Service
        SNMP Service Flag = off
/sci/config>

To disable SNMP services, simply set the service
flag to OFF.
/sci/config> snmp
Current SNMP Service Flag = on
on          - Enable SNMP Service
off         - Disable SNMP Service
        SNMP Service Flag = off
/sci/config>
```

Management Information Base

The Management Information Base (MIB) defines managed objects by specifying the grouping and naming of management information, the allowed operations, and the permitted data types. Applications such as SNMP use MIB information to manage network configuration as well as to monitor performance and faults. Applications also use MIB information to perform accounting and security tasks and to collect statistics.

The Nortel MIB contains all of the variables gathered by Nortel processes that are used by the Nortel management applications. This information allows Nortel OA&M to manage Nortel nodes on the network. You can access MIB data with any SNMP-compliant application. Refer to the documentation that came with your specific NMS for more information about accessing MIB data. This section provides information about the following Nortel MIB variables:

- Nortel Object Request Broker (NTORB)
- AP software
- MRS software

The Object Identifier (OID) 1116 is registered with the Internet Assigned Numbers Authority (IANA) for Nortel. The proprietary MIB number defines objects within Nortel's subtree, which is located under the branch `enterprises`.

Nortel Object Request Broker variables

The MIB vtorb contains information about the attributes of Nortel components that are managed by the Nortel Object Request Broker (NTORB). Table 8-2 displays information about these variables.

Table 8-2: Nortel Object Request Broker variables

Object identifier	Description/Value
vtorbProcessorType	Type of Nortel device on which the managed object is executing. Possible values are appServer (1) telephonyServer (2) appTeleServer (3) unknown (99)
vtorbRspUserName	User name for AP software system access that is used for remote logins to Nortel applications.
vtorbRspPassword	Password for AP software system access that is used for remote logins to Nortel applications. The password is encrypted when displayed in the MIB browser.
vtorbRspCoreProcessMgmt	Used to start and stop AP software processes remotely. Possible values are start (1) stop (2)
vtorbTspCoreProcessMgmt	Used to start and stop MRS software processes remotely. Possible values are start (1) stop (2)
vtorbTspUserName	User name for the MRS software system access that is used for remote logins to Nortel applications.
vtorbTspPassword	Password for MRS software system access that is used for remote logins to Nortel applications. The password is encrypted when displayed in the MIB browser.
vtorbRspInstallArea	Location of the AP software installation pathname.
vtorbTspInstallArea	Location of the MRS software installation pathname.
vtorbRspTempInstallArea	Location of the AP software temporary storage area.
vtorbTspTempInstallArea	Location of the MRS software temporary storage area.

Object identifier	Description/Value
vtorbTspLang	Language currently active for MRS software.
vtorbRspLang	Language currently active for AP software.
vtorbSystemSpaceTable	Table used to determine whether the required amount of space is available on the destination system.
vtorbSystemSpaceMountPoint	Name of the mount point on the local system.
vtorbSystemSpaceFreeBytes	Total number of free bytes.

AP software variables

The MIB variable `rsp` contains information about the attributes of the AP software components on the submap. The information is divided into the following groups:

- core process variables (see Table 8-3 on page 8-10)
- host communications variables (see Table 8-4 on page 8-11)
- resource manager variables (see Table 8-5 on page 8-12)

Table 8-3: AP software core process variables

Object identifier	Description
rspVersionNumber (currently not supported)	Current release number of AP software.
rspStartTime (currently not supported)	Time when the system received either a start or a restart request.
rspStatus (currently not supported)	Current status of AP software. Possible values are up (1) down (2) awaitingStart (3)
rspResetSeverity	Causes the appropriate processes to reread the severity file if set.
rspResetSeverityTime (currently not supported)	Time when the last `rspResetSeverity` request was received since system start time.
rspTotalSeverityRereads (currently not supported)	Current number of times a `rspResetSeverity` request was received since system start time.
rspTotalSeverityRereadFailures (currently not supported)	Current total of `rspResetSeverity` requests that failed since system start time.

Table 8-4: AP software host communications variables

Object identifier	Description
vendor	Type of host communications software. Possible values are: apertus (1) vt100 (2) inactive (3)
numLogicalUnits	Total number of defined logical units.
activeProtocol	Currently active protocol. Possible values are protocol3270 (1) protocol5250 (2) vt100 (3)
numBoards	Number of hardware cards active or defined in the application server.
logicalUnitTable	Status and statistics of each logical unit.
logicalUnitStatus	Current status of the logical unit. Possible values are logicalunitdown (1) logicalunitready (2) logicalunitidle (3) logicalunitbusy (4)
logicalUnitHostConnection	Current status of the host connection. Possible values are hostdown (1) hostup (2)
logicalUnitProg400Detected	Number of times Prog400 error is detected.
logicalUnitProg500Detected	Number of times Prog500 error is detected.
applicationsTable	Table used to define applications for each logical unit.

Object identifier	Description
applicationsInitialActionTemplate	Name of Initial Action Template.
applicationsPingTemplate	Name of Heartbeat Action Template.
applicationsPingValue	Time-out value for Heartbeat Action.

Table 8-5: AP software resource manager variables

Object identifier	Description
connectionTable	Indicates which MRSs are connected to AP software.
connectionTo	Node name of the MRS to which AP software is connected.
connectionStatus	Indicates the current status of the connection between an MRS and AP software. Possible values are up (1) down (2)
connectionPrimary	Variable that indicates whether the current active connection is the primary connection between a particular MRS and AP software. Possible values are yes (1) no (2)

MRS software variables

The MIB MRS contains information about the attributes of the MRS software components on the submap. The information is divided into the following groups:

- core process variables (see Table 8-6 on page 8-13)
- resource manager variables (see Table 8-7 on page 8-13)

Table 8-6: MRS software core process variables

Object identifier	Description/Values
tspSystemType (currently not supported)	Type of system architecture. Possible value is vtk (1)
tspVersion (currently not supported)	Current release number of MRS software.
tspStartTime (currently not supported)	Time when the system received either a start request or a restart request.
tspStatus (currently not supported)	Current status of MRS processes. Possible values are up (1) down (2) awaitingStart (3)
tspResetSeverity (currently not supported)	Causes the appropriate processes to reread the severity file when set.
tspResetSeverityTime (currently not supported)	Time when the last `tspResetSeverity` request was received since system start time.
tspTotalSeverityRereads (currently not supported)	Number of times a `tspResetSeverity` request is received since system startup.
tspTotalSeverityRereadFailures (currently not supported)	Total number of failed `tspResetSeverity` requests since system startup.

Table 8-7: MRS software resource manager variables

Object identifier	Description/Value
tspTotalNumPorts	Total number of physical ports configured in the system.
tspTotalVsnVolumes	Total number of VSN volumes on the system.
tspTotalCalls	Total number of calls that came into the system.
tspTotalCallsAnswered	Total number of calls answered by the system.

Object identifier	Description/Value
resourceTable	Listing of all the MRS resources.
resourceType	The type of board on the system. Possible values are fax (1) texttospeech (2) asr (3) switching (4)
resourceCount	Total number of a particular resource in the system.
channelTable	Listing of all the channels configured on the MRS.
channelIndex	A counter for the table entry. It represents the channel number.
channelState	The current state of the channel. Possible values are busy (1) open (2) notrunk (3)
channelType	The type of channel. Possible values are loopstart (1) trunkwithani (8) digitaltrunk (16) groundstartfloatingbattery (32) groundstartconventionalbattery (64) dideandmdtmfonly (96) dideandmdatapulse (128) alarmboard (160) aniboard (192) noboard (255)

Chapter 9: Tools

Overview

This chapter describes the tools available on the AP software. Tools reside in the `tools` directory (`\u\nortel\tools`), unless noted otherwise. The use of each administration tool is limited to one user at a time in order to avoid confusion and the potential corruption of data.

In order to view the available parameters and proper format to activate any tool, type the tool name, followed by a space, then a dash. A list of parameters and the appropriate formats is displayed on the screen.

admingen

The `admingen` tool enables users without root privileges to start and stop AP software. An `admingen stop` and `admingen start` should be performed whenever a change has been made to the system configuration.

The `admingen` tool, which is located in the `tools` directory of the OPEN IVR runtime account, executes the script `/etc/gen`.

Starting and stopping the AP software

To start and stop AP software, enter the following commands at the system prompt.

To start AP software:

- Type the following command: **`admingen start`**

To stop AP software:

- Type the following command: **`admingen stop`**

This tool is enabled by default during the installation of AP software.

If the functionality is not activated for some reason, the system displays the following message:

```
Unable to assume the identity of the root user. Make sure
the permissions are set correctly.
```

audit

The `audit` tool enables you to program individual processes in order to collect information about incoming requests. The tool can display how the requests are processed.

You can also control the verbose levels of the process, directing the audited process (or target) to verbose mode, and redirect the verbose output to a file or screen.

See the section “Using the Audit tool” on page 9-17.

bup

The `bup` tool backs up files to a device, restores backed-up files, and enables creation of a daily backup schedule from the command line. It works in a similar manner to `xbup`, described later in this chapter.

To invoke the `bup` tool, from the command line type **bup**, using the appropriate switches from the following list:

-schedule	Schedule a cron job, in the form -s HH:MM
-unschedule	Unschedule a cron job, in the form -u HH:MM
-file	Define the backup list file. If a file is not specified, the default is../backup/backup_def.bup
-view	View files in the media.
-restore	Restore files from media to the appropriate directory.
-device	Specify the backup media.
-now	Perform the backup immediately, instead of as scheduled.
-edit	Edit a list of files using the vi editor.

Note: If you do not specify a device to which the file should be backed up, the default `/dev/rct0` is used.

chdisp

The `chdisp` tool displays the channel map of all MRSs connected to OPEN IVR. The `chdisp` tool reads the System Configuration file and prints the number of active channels on each MRS, the channel numbers, and the corresponding trunk numbers. The trunk numbers are unique combinations of the channel numbers and the number of MRSs connected. The `chdisp` tool can be run from any directory except the `gen400` directory itself.

circ

The `circ` tool enables you to continue to capture the output from an application program to an ASCII text file, yet allows you to limit the size of the log file. You specify the maximum file size using the parameter `-w lines` on the UNIX command line. Text indicators in the output ASCII text file show the location of the last wrap and the last line.

To invoke the `circ` utility, specify the following UNIX command:

`circ -o` *`ofname`* `[-c] [-w` *`lines`*`] [-h] [-?]`

where

`-o` *`ofname`*	specifies the name of the output file to which your application program sends messages.
`-c`	indicates that if the file specified in the parameter *ofname* currently exists, then the file is cleared when it is opened.
`-w` *`lines`*	indicates the number of lines to wrap the output to the beginning of the file. The default is 1000 lines. Note that the size of the file can contain more lines.
`-h`	if you include this parameter in the command line, a usage message is printed, the circ utility exits, and you are returned to the command line.
`-?`	if you include this parameter in the command line, a usage message is printed, the circ utility exits, and you are returned to the command line.

Refer to the following examples of using the `circ` utility.

Example

```
sam -lo 1 -hi 1 | circ -o sam.out -w 2000 -e \
'End of output' -m 'Wrapped'
```

In this example, the `stdout` output from the application `sam.out` is limited to 2000 lines. The string `End of output` is output following the last line from the application. The last wrapped area is indicated by the text `*****Wrapped*****`.

Example

```
sam -lo 1 -hi 1 | circ -o sam.out
```

In this example, the `stdout` output from the application `sam.out` is limited to 1000 lines.

cnvrt

The `cnvrt` tool converts prompts and messages used by applications to the specific VSN that resides on a specific MRS and vice versa. It also converts decimal to hexadecimal and vice versa.

Invoking the cnvrt tool

To invoke the `cnvrt` tool, follow this step.

1 From the tools directory, type `cnvrt` and press <Enter>.

The following menu is displayed:

```
1.VSN to Handle
2.Handle to VSN
3.Decimal to Hex
4.Hex to Decimal
5.Exit
```

Note: Numbers can be expressed in hexadecimal with a 0x prefix or in decimal with no prefix. When the conversion is complete, the handle is displayed in hexadecimal and decimal. For more information on handles, refer to the entry on the DELV cell in the *Symposium OPEN IVR Cell Catalog.*

cnvrt tool menu options

To convert a VSN number to a handle number, follow this step.

1 At the cnvrt menu, type **1** and press <Enter>.

The system prompts you for the VSN to be converted.

The system then prompts you to enter the MRS number where the VSN resides.

To convert a handle to a VSN, follow this step.

1 At the `cnvrt` menu, type **2** and press <Enter>.

The system will prompt you for the handle to be converted to a VSN.

To convert a decimal to a hexadecimal, follow this step.

1 At the `cnvrt` menu, type **3** and press <Enter>.

The system will prompt you for the handle to be converted to a VSN.

To convert a hexadecimal to a decimal, follow this step.

1 At the `cnvrt` menu, type **4** and press <Enter>.

The system will prompt you for the hexadecimal to be converted to a VSN.

Exiting from the cnvrt menu

1 To exit from this menu, type **5** and press <Enter>.

devnt

The `devnt` tool displays the contents of the `csc_events` file, which resides in the `sys_files` directory. This file contains a list of all the times, telephone numbers, and event IDs scheduled to run for the applications. Refer to the section, “Using the sched tool” on page 9-19.

dmsgd

This tool dumps the contents of message databases. All the data is displayed on the screen.

Invoking the dmsgd tool

To invoke the `dmsgd` tool, follow these steps.

1 From the `tools` directory, type **`dmsgd`** and press <Enter>.

Note: OPEN IVR must be running before you can use `dmsgd`.

The following message appears prompting you to enter the name of the database you want to dump:

```
(Enter the name of the Database:)
```

2 Enter the name of the database, and press <Enter>.

dsysf

The `dsysf` tool displays the contents of the `sysgen.d` file, which resides in the `sys_files` directory. This file contains the configuration information entered by the user through the System Configuration Management screen.

dtrkf

The `dtrkf` tool displays the contents of the `trunk_init.d` file, which resides in the `sys_files` directory. This file contains the protocol for handling trunks of various types (DID, Loopstart, etc.).

/etc/gen

This is used by the system administrator to shut down and start up the OPEN IVR runtime system. This tool is also called during the system boot to automatically start up OPEN IVR.

Shutting down the system

The system administrator should type the following command any time an OPEN IVR shutdown is required:

```
/etc/gen stop
```

Restarting AP software

To restart AP software, type the following command:

```
/etc/gen start
```

exp

This command reads the data files in the AP software `stat.d` directory. As a file is read, its data is exported into an ASCII file as tilde (~) or comma-separated fields suitable for import into databases or programs such as a Report Writer.The `exp` command also allows you to change the wrap size of statistics files. See the section “Using the export tool” on page 9-36.

genshut

This command brings AP software down forcefully and frees all of its system resources. Use this tool *only* if you suspect abnormal system behavior.

greset

This command gracefully shuts down AP software and automatically brings it back up. This command will clear the original file after performing a backup of the original comments. You must be running AP software before you can use `greset`. This command requires root user privileges.

CAUTION

Risk of data loss

If the AP severity file is not set to send all messages to the console, no messages will appear after the reset is performed.

To avoid this problem, perform an **admingen stop/start** instead to automatically reset the severity file after the system reset has been performed.

killall.sh

This shell script is executed to verify that all AP software processes and user functions have responded to a stop request. If any are still running, they are forcefully killed.

In order for the `killall.sh` script to correctly identify your user functions, you must add entries to the local shell environment variable `others`. For example, if the user function `USER_FUNCTION` is part of an application, the relevant lines should read:

```
                              ...
                              ...
   if [ "$1" = "OPEN IVR"]; then
        others="msg plf sai sam sde smi vrtd xai sched
cli_s
trs_a trs_linkix trs_ssi trsc trsl fds ods ids sds usr
USER_FUNCTION"
        elif [ "$1" = "MRS"]; then
                              ...
                              ...
```

mvpmt

This command allows the user to move a range of prompts to occupy a different contiguous range of VSNs.

To invoke the `mvpmt` tool, type

`mvpmt <`*`prompt_range`*`><offset>`

where *`prompt_range`* is the first and last prompt to be moved, separated by a "-" (hyphen). `Offset` is the location from the beginning where the prompts are to be moved. For example, to move the prompts 100-150 to the new location 300-350, the command is: `mvpmt 100-150 300.`

Note: AP software must be running before you can use `mvpmt`.

mvsnf

This is used by `make_vsn_files` to create empty `vsn.data` files.

nedit

This is a graphical text editor. It is used to display the Call Detail Report, Call Audit Report, Subscriber Report, Trunk Usage Report, Transaction Log Report, or any text file.

`nedit` provides generic editing functionality. Commands are available from the pull-down menus (File, Edit, Search, and so on). All of the dialogs have Cancel buttons, and the Undo command in the Edit menu can immediately reverse any modifications that you make. `nedit` does not change the file you are editing until you save it.

To run `nedit`, follow this step.

1 On the command line, type **`nedit [file...]`** optionally followed by the name of a file or files to edit.

`nedit` provides detailed online Help from the pull-down menu on the far right of the menu bar.

ralrm

Resets the minor alarm on all MRSs. AP software must be running before you can use `ralrm`.

rstat

Resets all of the statistics files and clears the transaction log file. AP software must be running before you can use `rstat`.

sched

Allows you to schedule an application through the emulation of the DELV, UDLV, and LDLV cells. Refer to the section “Using the sched tool” on page 9-19 for more information.

sconfig

Provides a system administrator with the ability to turn Call Auditing on or off for AP software. Updates the *Call Auditing Enabled* field within the (`stats.config`) file located within the `stat.d` directory.

If you use `sconfig` to turn Call Auditing on, AP software sends all collected Call Audit Statistics to the `audit_stat.d statistics` file.

If you use `sconfig` to turn Call Auditing off, AP software will not send the Call Audit Statistics collected to the `audit_stat.d` statistics file. (This can also be used to override an EVENT cell.)

To invoke `sconfig`, at the prompt, follow this step.

1 Type **`sconfig -audit [on off]`**.

Reset AP software to have changes made by `sconfig` take effect.

shvsn

Reads a `vsn`*`X`*`.data` file (where *`X`* is the number of the MRS) and displays the VSNs that are allocated to the screen.

To invoke the `shvsn` tool, at the prompt, follow this step.

1 Type **`shvsn <vsn_filename>`**

where *`vsn_filename`* is the path and file name of the VSN data file you want to display. For example, if you enter

```
shvsn ../sys_files/vsn1.data
```

the reserved VSNs in the VSN data file for MRS number 1 are displayed.

statsbkup

Backs up the statistics file based on the type and pathname from user inputs. If AP software is running, a reset option is available with this tool.

To invoke the `statsbkup` tool, type

`#statsbkup -t audit -f audit_stat.d -r`

where

`- t` is the statistic file type. The currently available type is (case-insensitive): `audit - Call Audit Report`.

`- f` indicates the pathname to the file for deposit of the backup.

`- r` directs the system to reset the file `audit_stat.d` after the backup is created.

To regularly schedule a statistics files backup, you must create a `crontab` file and submit it to the UNIX cron process. See your UNIX administrator for more information on `crontab` files.

version

Displays the version number of the AP software installed on your machine.

vip_audit

Displays the last 100 requests sent to a vip process for a particular trunk.

To invoke the `vip_audit` tool, type

`vip_audit -t <`*`trunk_num`*`> -id <`*`MRS_num`*`>`

where *`trunk_num`* is the number of the trunk on a particular MRS that the user wishes to use. The valid range is 0 to 254. The *`MRS_num`* entry is the number of the MRS where the trunk resides. This number can be in the range of 1 to 32. Run AP software in order to use `vip_audit`.

vsn

Updates the `vsn`*x*`.data` files in the `sys_files` directory to reflect the VSNs used on the MRS in the system. Refer to the section “Synchronizing VSN data files” on page 9-35 for more information. Run the tool `vsn` when you install AP software and when you update VSNs in order to synchronize your updates with the changes on the MRS.

xbup

Backs up files to a device, restores backed-up files, and enables creation of a daily backup schedule. See the section “Using the backup tool” on page 9-25.

Internal system tools

Note: The following tools are documented for informational purposes only. The tools are run by the OPEN IVR AP software.

dpnd

Runs when a user function is built with the `make` utility.

gmessage

Runs when AP software displays a message on the OPEN IVR System Console.

logcp

Runs when a user function is built with the `make` utility.

makedepend.drv

Runs when a user function is built with the `make` utility.

mkproto.drv

Runs when a user function is built with the `make` utility.

ptype

Runs when a user function is built with the `make` utility.

License client and server tools

AP software provides a set of administrative tools for interfacing with the license server from the AP. AP tools are described in this section. Refer to Appendix B, Appendix B, "Software license manager," for a description of the server tools that are provided with the license manager software.

Note: `lmdiag` and `lmstat` are both client and server tools.

CAUTION

Risk of system failure

Do not modify the contents of the license file without the advice of Nortel Customer Service.

lmdiag

The `lmdiag` tool enables you to diagnose problems when you cannot check out a license.

Usage: `lmdiag [-c` *`license_file`*`] [-n] [`*`feature`*`]`

where

`-c` *`license_file`*	is the path name for the specified file that `lmdiag` is to diagnose. ***Note:*** If you do not use the -c option, then the license file that you specify in the LM_LICENSE_FILE environment variable is used.
`-n`	specifies noninteractive mode. In noninteractive mode, lmdiag does not prompt for input. In addition, extended-connection diagnostics are not available in noninteractive mode.
`feature`	specifies the feature for `lmdiag` to diagnose (for example, genAP-odt-runtime).

If you do not specify a feature, `lmdiag` operates on all features in the license file(s) in the designated path. First, `lmdiag` prints information about the license; then `lmdiag` attempts to check out each license. If the checkout is successful, `lmdiag` indicates a success status. If the checkout fails, then `lmdiag` indicates the reason for the failure.

If the checkout fails because lmdiag cannot connect to the license server, then you can run "extended connection diagnostics." These extended diagnostics attempt to connect to each tcp port on the license server node and can detect whether the tcp port number in the license file is incorrect. The `lmdiag` tool indicates each port number that is listening and tells you if the port is a license-server process. If `lmdiag` locates the vendor daemon for the feature it is testing, then `lmdiag` indicates the correct port number for the license file in order to correct the problem.

lmstat

The `lmstat` tool enables license-manager users to monitor the current status of all network licensing activities. The tool allows a user to monitor license-management operations, such as status of the license-manager and vendor daemons, and licensed users and user nodes for individual features.

Usage:

`lmstat [-a] [-S [`*`daemon`*`]] [-f [`*`feature_name`*`]] [-i [`*`feature_name`*`]] [-s [`*`server_name`*`]] [-t value] [-c [`*`license_file`*`]] [-A]`

where

`-a`	displays everything. ***Note:*** If there are several active users, specifying the `-a` option in the `lmstat` command line can generate an abundance of network activity.
`-S [`*`daemon`*`]`	restricts the output to the named daemon and to the features and users of that daemon. An option on the network may exist that is managed by license daemons from other vendors.

`-f [`*`feature_name`*`]`	lists the users of the named feature (for example, genAP-odt-runtime).
`-i [`*`feature_name`*`]`	prints information about the named feature, or about all features if no feature is specified.
`-s [`*`server_name`*`]`	displays the status of the named server node. If you simply type **`-s`**, then the status of all server nodes is displayed. License servers from other vendors' software may be available on the network. Use the node name of the license server for AP software.
`-t`	sets the `lmstat` time-out value to "value."
`-c [`*`license_file`*`]`	informs lmstat to use the named file. If you do not specify this option, then `lmstat` uses the license specified in the LM_LICENSE_FILE environment variable.
`-A`	lists all active licenses.

Using the audit tool

The `audit` tool can handle a number of options, some of which set certain flags on the audited process (referred to here as the target), some that just display information, and some that require the audit to remain active and gather information from the target.

To invoke `audit`, type **`audit -l`**

or

`audit [-p <target>] [-v <[on/off]>] [-f <file>]`

where

`-l` lists the names of the possible target processes.

`-p` followed by the <*target name*> designates the target process you want to audit.

`-v` turns the target's verbose mode on or off (the default is on).

`-f` specifies the file to write verbose output. If you do not specify the file name, `audit` displays the trace information on the screen. Note that this option is valid only when `-v` is set to on.

In the example below, `vft1` is the name of the target process, with its verbose mode set to on:

```
audit -p vft1 -v on
```

Note: Specify target (**`-t`**) when using the switch `-v` or the switch `-f`.

If a process supports auditing, it will keep track of all messages that are received by the process. Every message will reference a channel, and the entry stored is based on the channel ID.

The `audit` tool supports additional switches that are specific to the TRS process.

When TRS is the target process, you can use the following switches:

`-s <log size>`	this switch causes TRS to change the number of records it allows in its log file before wrapping back to the top. The default log size is 50 000 records.
`-L <lu range>`	identifies all the logical units to be logged. The variable <lu range> can include any combination of ranges (for example, 2–10) or lists (for example, 2–10, 15, 20–24).
`-m <message type>`	this switch lists the message types to log where the variable message type is a list of any of the following types: • VITAL • WARNING • APPL • INFO • SCREEN

Note: Specify target (**`-t`**) with all of the above options; the target must be TRS.

Using the sched tool

You can affect the scheduling of an application through the emulation of the following three cells via the command line or a shell script:

DELV

Schedules an outgoing application to occur at some later time.

UDLV

Unschedules a previously scheduled application event.

LDLV

Gets the buffers that will be passed to a previously scheduled application event.

`sched` communicates directly with the AP software scheduling system, the `csc`, and requests the desired action. The status of the request and any output buffers are passed back as the shell command status and standard output.

Note: Run AP software in order to use `sched`.

The following section contains the command line arguments to use with `sched` for emulation of each specific cell.

Scheduling applications

To schedule an application, type **`sched -d`** (`-d` specifies that this is the DELV request) plus one or a combination of the following required and optional switches that follow.

The correct command line format is

```
sched -d -a <application name>  -o <phone #> -t
<date-time>
-n<interval> -r minutes [-h <handle>] [-(1-5) data] [-v]
```

Required switches

`-a application name`	The application name to schedule. Do not include the application name.vpf extension in your command line.
`-o phone #`	Specifies the outdial number to be passed to an application when the outgoing event is serviced by AP software.
`-t date-time`	For absolute schedule requests, enter the time in the format mmddyyyyhhmm for the event to be serviced.
`-r minutes`	For relative time schedule requests, enter the time in this format for the number of minutes; that is, the number of minutes from now to the actual time of the event. The value `-r` (minutes) cannot exceed 9999999. For example, if you wanted to start the application in 30 minutes, you would enter the number 30.
`-n interval, date-time`	For rescheduling time requests, enter the daily interval and the absolute time in this format: interval, for the number of days to allow between each rescheduled delivery, and mmddyyyyhhmm for the absolute time to schedule the application. For example, you would enter the command line as 1, 070219951200 to reschedule to run on July 2, 1995 at 12 noon.

You can schedule for absolute time or relative time, or reschedule.

Optional switches

`-h` `handle`	The delivery handle to pass to the application when the delivery event occurs. Refer to the entry on the DELV cell in the *Symposium OPEN IVR Cell Catalog* for more information about handles.
`-v`	Turns verbose mode on. Verbose mode provides the details of the communication with the csc, such as the outdial number, the delivery interval, the event scheduling, response received message, and the event has been scheduled message with the event ID.
`-(1-5)` `data`	Optional data items, Data Exchange Buffers 1 through 5, consisting of whatever information you wish to pass into the application when the delivery event occurs.

Unscheduling events

To unschedule an event, type **`sched -u`** (`-u` specifies that this is a UDLV request) plus one or a combination of the following required and optional switches that follow.

The correct command line format is

```
sched -u -e <event_id> [-v]
```

Required switches

`-e` `event_id`	Specifies the event ID for the UDLV request. Refer to the `devnt` section on page 9-5 for more information.

Optional

`-v`	Turns on verbose mode. Verbose mode provides the details of the communication with the csc, such as the outdial number, the delivery interval, the event scheduling, the response received message, and the event has been scheduled message with the event ID.

Listing previously scheduled events

To list a previously scheduled event, type **`sched -l`** (`-l` specifies that this is a LDLV request) plus one or a combination of the switches that follow.

The correct command line format is

```
sched -l -a <application_name> -o <phone #> [-v]
```

Required switches

`-l`

Optional switches

`-a application_name`	Indicates the name of the application to schedule. Do not include the `.vpf` extension in the command line.
`-o phone #`	Specifies the outdial number for which the event has been scheduled.
`-v`	Turns on verbose mode. Verbose mode provides the details of the communication with the `csc` such as the outdial number, the delivery interval, the event scheduling, the response received message, and the event has been scheduled message with the event ID.

Successes

Successes can produce three possible results:

1 If you have successfully scheduled an event, a message will appear at the prompt stating that the event has been scheduled with the event ID.

2 If you have successfully unscheduled an event, a message will appear at the prompt stating that the event has been unscheduled with the event ID.

3 If you have buffers from a previously scheduled application event, you will get the handle (if you had entered the handle in the command line), the event ID, and the contents of all five Data Exchange buffers.

Failures

Failures can produce four possible results:

1 If your scheduling has failed, a message appears stating that there is no communication with the `csc`.

2 If the format was not correct in the command line, the online help appears listing the correct usage.

3 If the event does not exist, a message appears stating so.

4 If the input value for either `Relative time` or `Absolute time` is not numeric, a message is displayed that tells you the value is not numeric and that the event is not scheduled.

Refer to the discussion on the `devnt` tool in this chapter. The `devnt` tool displays the contents of the `csc_events` file, which contains a list of the applications that are scheduled to be run, as well as other useful information about scheduled events.

Examples using the sched tool

Canceling a previously scheduled application event

The following command unschedules event number 45:

```
sched -u -e 45
```

where

`-u` specifies that this is a UDLV request.

`-e` is the event number that you want to unschedule.

Scheduling an outgoing application

The following command schedules the application called "outbound" to be run at 6:45 p.m. on June 9, 1995, dialed to telephone number 437-1245. The handle "2000" is passed to the application, and the values "25" and "50" are passed to the buffers, DATA EXCHANGE #1 and DATA EXCHANGE #2, in the application.

```
sched -d -a outbound -o 4371245 -t 060919951845 -h 2000
-1 25 -2 50
```

where

`-d` specifies that this is a DELV request.

`-a` is the application name.

`-o` is the telephone number to be dialed.

`-t` is for absolute delivery time.

Listing data about a scheduled event

The following command allows you to get information about the application “outbound” where telephone number 437-1245 is dialed.

```
sched -l -a outbound -o 4371245
```

where

`-l` specifies that this is a LDLV request.

`-a` is the application name.

`-o` is the telephone number to be dialed.

The following information is output to standard output:

```
Handle = 2000, Event Id = 2
DATA EXCHANGE #1 = 25
DATA EXCHANGE #2 = 50
DATA EXCHANGE #3 =””
DATA EXCHANGE #4 =””
DATA EXCHANGE #5 =””
```

Using the backup tool

The `backup` tool resides in the AP software `tools` directory. You can invoke the `backup` tool in one of the following ways:

- Select it from the `root` background menu.
- Change directories (`cd`) to the AP software tools directory and type **`xbup`** at the command line.
- From the X environment, type the following command at the shell prompt: **`xbup_start`**

The Backup Tool main menu is displayed, as shown in Figure 9-1.

Figure 9-1: Backup Tool main menu

The window in the Backup Tool Main Menu contains the “Restore,” “Backup,” “Quit,” and “Help” buttons as well as the *Device Input* field. The *Device Input* field displays the default backup/restore device name, `/dev/rct0`.

To change the backup/restore device, either click the down arrow at the end of the field and select a device from the pulldown menu, or type the path and name of the device manually.

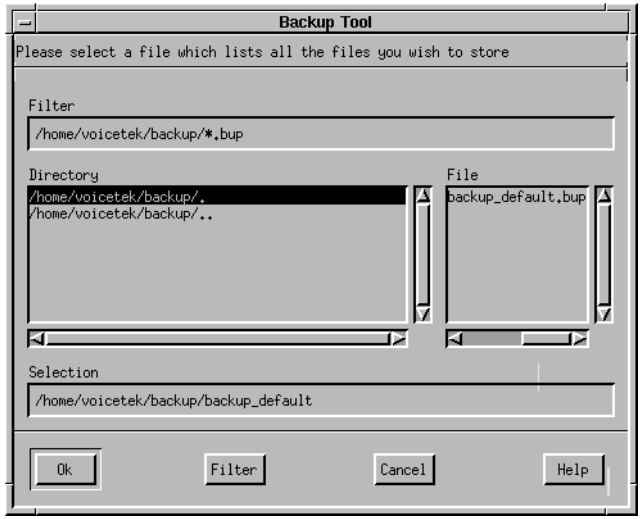
Before backing up or restoring files, be sure that the *Device Input* field displays the correct device.

Also, ensure the size of the planned backup does not exceed the storage capacity of the media to be used. If the backup is too large, separate the files to be backed up into smaller groups, and perform multiple backups.

Backup Tool file selection window

The AP software backup tool requires a destination file in which to place all of the files you choose to back up. Include the suffix.bup in this destination file in order for the backup tool to recognize it as a backup storage file. The fields in this window help you create a backup destination file or locate an existing one.

Figure 9-2: Backup Tool file selection window



There are four main fields in this window:

Filter

This field lets you specify a pathname for the backup destination file.

Directory

This field provides a scrollable list of directories with the pathname specified in the Filter field.

File

Highlighting a directory in the Directory field displays a scrollable list of files.

Selection

This field shows the full pathname of the backup destination file.

Use the Filter field to search for backup destination files (files with the `.bup` suffix).

Backing up files

The AP software backup procedure consists of three steps:

1. Create a destination file to contain all of your backup files.
2. Select the files for backup.
3. Schedule the backup.

Creating the backup destination file

To create the backup destination file, follow these steps.

1. From the `Backup Tool` main menu, click the "Backup" button.

   The Backup Tool File Selection window appears, as shown on page 9-27.

2. After entering a pathname in the *Filter* field, click on the "Filter" button.

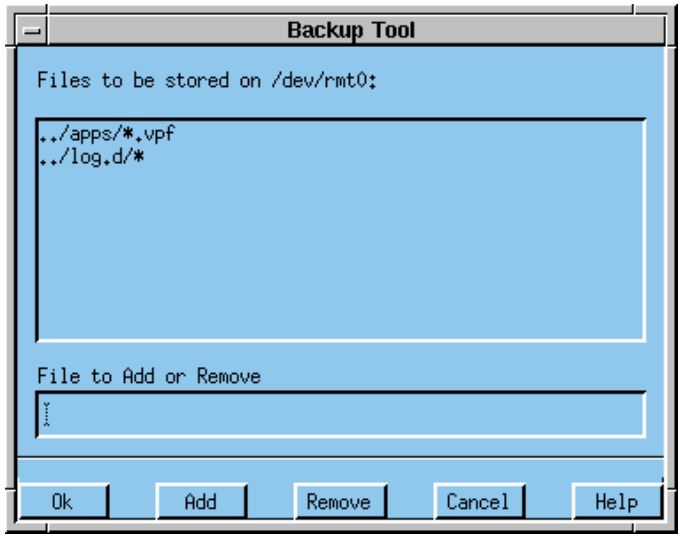
   This brings up a list of directories in the *Directory* field. Selecting a directory in the Directory field displays the files it contains in the *Files* field. Clicking on a file in the *Files* field places it in the *Selection* field. You can also directly type a file path and name in the *Selection field.*

3. To a new backup destination file, enter its path and name in the *Selection* field. The `Backup tool` will create it if it does not already exist.

Selecting the backup source material

1. Once you enter the correct path and file name in the *Selection* field, click the OK button.
2. The Backup File Content window is displayed.

Figure 9-3: The Backup file content window



3 From this window, select the files you wish to back up.

AP software provides a default list of certain files, that is always added to the list of files to back up (see Figure 9-3). These files automatically appear when you open a backup destination file.

4 You can select additional files by specifying their path and name in the *File to Add or Remove* field, then clicking the “Add” button.

As you select files, they appear in the main field in the window.

5 To remove a file, click it in the main field to highlight it. Then click the **“***Remove”* button.

6 After all the files you wish to back up appear in the Backup File Contents window, click the ***“OK”*** button.

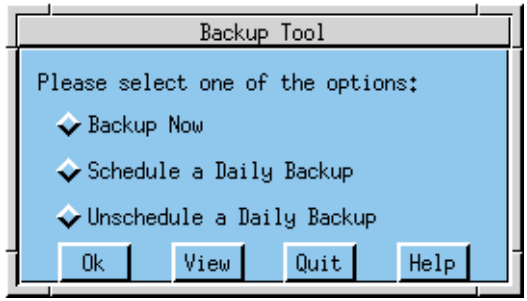
Your backup is now configured and is ready to be scheduled and executed.

Schedule the backup

The Backup scheduler window shown in Figure 9-4 provides the following options:

- Backup Now
- Schedule a Daily Backup
- Unschedule a Daily Backup

Figure 9-4: Backup scheduler



From the Backup Tool Scheduler window, you can do the following:

- Press `OK` to initiate the selected backup option.
- Press `View` to display the contents of the device.
- Press `Quit` to exit the window.

Selecting a backup option

Select the appropriate option from the Backup Tool window to perform the backup.

CAUTION

Risk of data loss

When the backup is complete, check the disk to verify that the backup was successful.

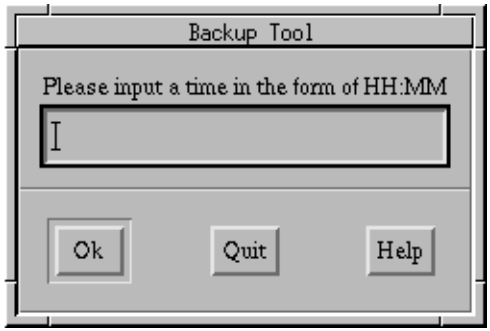
Backup Now

Selecting the `Backup Now` option immediately backs up the files you have selected for backup to the file and device you specified in the previous windows.

Schedule a Daily Backup

Selecting `Schedule A Daily Backup` brings up the window shown in Figure 9-5.

Figure 9-5: Scheduling window



`Schedule a Daily Backup` lets you choose a repeating daily interval for backup execution. The Backup Tool will execute every day at the time you specify in this field.

Enter the time for the backup to execute in hour: minute 24-hour format. For example, 10:40 pm would be 22:40. 1:25 am would be 01:25. The backup will execute daily at this time.

Unschedule a Daily Backup

`Unschedule a Daily Backup` lets you disable the daily backup cycle. Selecting `Unschedule a Daily Backup` brings up the `Scheduling` window. In the `Scheduling` window, enter the time that the backup is scheduled for, then click `OK`. This disables the daily backup.

Restoring files

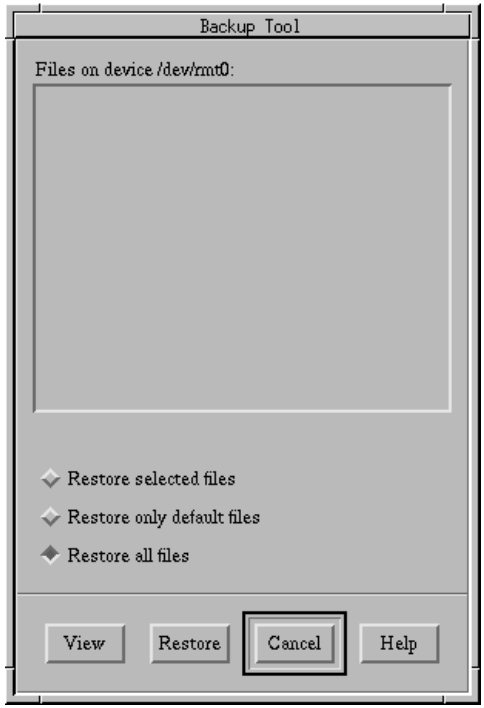
Note: Restoring files automatically copies over the existing versions of the files.

Before restoring files, be sure that you have selected the device containing your backed up files. See Figure 9-1.

1 From the `Backup Tool` Main window, click the “Restore” button.

2 The `Restore Options` window is displayed.

Figure 9-6: Restore options



3 Select one of the three options in the window:

- **`Restore selected files`** This feature restores only those files that you highlight. To view the files available for restoration, click `View`. Click the files you wish to restore.
- **`Restore only default files`** This feature restores the default files only, which are automatically backed up by the system. These default files are specified automatically on the system, and include the logs and application (*vpf*) files.
- **`Restore all files`** This feature restores all the backed up files on the device.

4 Click the “Restore” button to restore the selected files.

Backup Tool help

From the `Backup Tool` main menu, select the Help button.

Quitting the Backup Tool

To quit the Backup Tool, from the `Backup Tool` main menu, select `Quit`.

System Administrator Script Executor (sase)

The sase process can run application scripts outside of the System Administrator interface. Run AP software in order to use sase. To invoke sase, follow these steps.

1 Change directory (cd) to access the .exe directory.

2 Type **sase -s** <script_name> and press <Enter>, where script_name is the name of an ASCII text file that contains instructions to LOAD, SET CHANNELS, START, and other application functions.

This file can be created through the Write a Script option of the Application Interface icon on the Control Panel, or through any text editor, such as vi. The script file must reside in the exe directory and have the extension .sai. Do not include the extension on the name of the script file when the sase is invoked.

Once you invoke the sase, AP software writes messages to the transaction log stating when the following events occur:

- The process starts.
- It sends a script to be executed.
- It shuts down.

3 To confirm the actions of sase, bring up the Application interface from the Control Panel and verify that the instructions in the script are being executed.

You can also invoke sase from a UNIX script file or as a cron request. When sase completes its task, the sase exits with a specific status:

- If sase is connected to AP software properly and the request to execute the script was sent off successfully, an exit status of 0 results.
- If sase could not connect to AP software properly or the script file passed on the command line did not exist, an exit status of 1 results.

Note: sase cannot verify the contents of the script file. If there are errors in the script file, they are detected by the sad (System Administration) process and are logged in the transaction log.

Synchronizing VSN data files

Note: Do not run AP software during this procedure.

If you previously installed AP software and the MRS contains recorded messages or prompts on the disk, follow this procedure to guarantee that the VSN data files match the contents of the disks on the MRS.

Note: Synching files for an MRS/AP, MRS/Tower, or MRS/Rack cannot be accomplished if the MRS/AP, MRS/Tower, or MRS/Rack is not attached to the same network as the AP through the LAN.

Each MRS in the system has a separate VSN data file. Therefore, you must execute this procedure separately for each affected MRS, and run each procedure after the completion of the AP software installation.

1 Log in to the account where AP software is installed (`u/nortel`). Enter the password that was selected when the account was created.

2 In the UNIX shell, change the directory (`cd`) to the AP software home directory (`/u/nortel`).

3 At the prompt, type **`cd sys_files`** `and press` <Enter>`.`

4 In a UNIX shell, enter the following command:

`vsn -v -f <`*`filename`*`> -n <`*`node_name`*`>`

where *`filename`* is the name of the VSN data file to be updated (VSN data files are named vsnMRSnumber.data), and *`node_name`* is the host name of the MRS/AP, MRS/Tower, or MRS/Rack.

```
vsn1.data   for MRS #1
vsn2.data   for MRS #2
```

5 Press <Enter>.

Using the export tool

The `export` tool converts the AP software binary statistics file `audit_stat.d` to a comma-separated list of records in ASCII format, so that the data may be imported into other packages (such as databases, spreadsheet report writers, and so on). When the export tool (which can be accessed via the `Statistics` menu icon from the OPEN IVR User Interface as well as from the command line) exports the `audit_stat.d` file, it creates two ASCII files, `audit_hdrs.asc` and `audit_data.asc.` These files are created in the `stat.d` directory.

To invoke the export tool, type

`exp [-e` *`filename`* `-a` *`filename`* `-c max records]`

where

`-e filename`	exports the file specified by the file name into an ASCII file with records containing comma-separated fields. The files created are `audit_hdrs.asc` and `audit_data.asc` in the `stat.d directory`.
`-a filename`	exports the file specified by the file name into an ASCII file in a format compatible with the 4S Report product.
`-c max records`	changes the field to show max records. You must restart AP software for the changes to take place.

The exported ASCII file `audit_hdrs.asc` contains data for all the headers that were included in the `audit_stat.d` file. These headers contain information about the calls that were executed while the auditing capability was enabled. The format of a record in `audit_hdrs.asc` follows:

Header record	*`[record_number,application_name,ani_digi ts,`* *`channel_number,MRS_number,trunk_number,`* *`start_date,start_time,start_timestamp,st op_date,`* *`stop_time,stop_timestamp,number_of_cell_ events]`*

where

`record_number`	indicates a unique record ID between 0 and 4 294 967 295.
`application_name`	indicates the application name. This can be up to 10 characters.
`did_digits`	gives the DID or DNIS, if used, entered before the call started. This entry can include a maximum of 31 characters.
`ani_digits`	gives the ANI entered before the call started. This entry can include a maximum of 31 characters.
`channel_number`	indicates the channel that executed a call. This is a number between 0 and 8192.
`MRS_number`	iIndicates the MRS where the call originated. This is a number between 1 and 32.
`trunk_number`	indicates the particular trunk on the MRS where the call originated. This is a number between 0 and 255.
`start_date`	gives the date the on which the call started in the format mmddyyyy (for example, 06211997).
`start_time`	gives the time at which the call started, in the format mm:hh:ss (for example, 22:15:58).
`start_timestamp`	gives the time stamp of when the call started, in the UNIX convention of number of seconds since 00:00:00 Greenwich Mean Time (GMT) January 1, 1970.
`stop_date`	Gives the date on which the cell stopped, in the format mmddyyyy.

`stop_time`	gives the time at which the cell stopped, in the format mm:hh:ss.
`stop_timestamp`	gives the time stamp of when the cell finished executing, in the UNIX convention of number of seconds since 00:00:00 Greenwich Mean Time (GMT) January 1, 1970.
`number_of_cell_events`	indicates the number of data records corresponding to this header. These are written to the file audit_hdrs.asc.

```
/* Sample ASCII output of audit events header records */

  89,_event,1234,,0,1,0,12281995,10:25:02,820164302,
  12281995,10:25:04,820164304,103,

  99,_event,1234,,11,1,124,10141994,11:22:31,
  782148234,10141994,11:26:10,782148274,249,
```

The exported ASCII file, `audit_data.asc`, contains data for all the cells that were audited for a specific call when the auditing capability was enabled. The format of a record in `audit_data.asc` follows:

Data record

```
[record_number,application_name,cell_name,
cell_number, cell_stop_date,
cell_stop_time, cell_stop_timestamp,

cell_comment, buffer_count, buffers]
```

where

`record_number`	indicates a unique record number that matches the corresponding header in `audit_hdrs.asc.`
`application_name`	gives the name of the application from which the cell executed. This can be different from the application in the header if a prior GSUB or EXEC cell was executed.
`cell_name`	provides the contents of the name field on the cell parameter page.

`cell_number`	shows the cell's unique ID number, as presented on the cell palette.
`cell_stop_date`	gives the date when cell execution finished, in the format mmddyyyy.
`cell_stop_time`	gives the time when cell execution finished, in the format mm:hh:ss.
`cell_stop_ timestamp`	gives the timestamp of when the cell finished executing, in the UNIX convention of number of seconds since 00:00:00 Greenwich Mean Time (GMT) January 1, 1970.
`cell_comment`	holds the contents of the Comments field (maximum of 31 characters) on the cell parameter page.
`buffer_count`	keeps track of the number of user-specified buffers. This can be up to five if the cell type is EVENT, or limited to one for all other cell types.
`buffers`	holds the contents of user-specified buffers. Each buffer can store a maximum of 2000 characters internally; a maximum 31 characters can be exported. Buffers are separated by commas.

```
/* Sample ASCII output of audit events data records */

  89,_event,Open In. File (Audit),9,12281995,10:25:02,
   820164302,Open input file to read,1,1234,,,,,

  89,_event,Convert Date (NO),18,12281995,10:25:02,
  820164302,Convert data,1,08091995,,,,,
```

Resizing statistics files

AP software statistics files are circular files that allow a hard-coded number of records to be stored. The default number of records for the `audit_stat.d` file is 48 750.

A record is a header or data record described in the previous section. Consequently, each header and data record that is added to `audit_stat.d` counts toward the maximum record count for the file. For example, if a file contains four headers and four data records, the total number of records in the file is eight.

The `export` tool allows you to change the maximum number of records. A configuration file will contain the maximum record values for the `audit_stat.d` files. When the size is changed by means of the `export` tool, the corresponding value in the configuration file and the statistics files change as well.

CAUTION

Risk of data loss

Changing the maximum number of records for `audit_stat.d` files may result in lost or extraneous data. Old data may remain that will not be read, and a new wrap point may mean that existing wrapped records will no longer be properly indexed. Make some backup provision to prevent inadvertent data loss if a resize is performed. It is also recommended that you perform a reset of statistics at this time, so that data may be retrieved correctly once the resize takes effect.

Note: AP software must be up and running in order to use the resize option.

Appendix A: Standard prompts

The following is a list of standard Symposium OPEN IVR prompts. Standard prompts are used in many applications. Recordings of these prompts are included with Symposium OPEN IVR AP software.

Prompt number	Prompt
0	zero
1	one (masculine version)
2	two
3	three
4	four
5	five
6	six
7	seven
8	eight
9	nine
10	ten
11	eleven
12	twelve
13	thirteen
14	fourteen

Prompt number	Prompt
15	fifteen
16	sixteen
17	seventeen
18	eighteen
19	nineteen
20	twenty
21	thirty
22	forty
23	fifty
24	sixty
25	seventy
26	eighty
27	ninety
28	hundred
29	thousand
30	oh
31	star
32	pound
33	January
34	February
35	March
36	April
37	May

Prompt number	Prompt
38	June
39	July
40	August
41	September
42	October
43	November
44	December
45	on
46	at
47	a.m.
48	p.m.
49	The system storage is nearing capacity.
50	The system storage is at capacity.
51	We were unable to record this message.
52	You cannot record any new messages at this time.
53	Welcome to...
54	Hello.
55	Thank you. Goodbye.
56	That is an invalid response.
57	There are...
58	The number of messages waiting is...
59	At the tone, leave your message. When finished, press...

Prompt number	Prompt
60	Your message has been delivered.
61	We were unable to deliver your message.
62	No new messages may be recorded at this time.
63	There are no more messages waiting.
64	The operator will be with you momentarily.
65	You have paused the recording. To resume, press...
66	To save, press 1.To review, press 2. To delete, press 3.
67	To rerecord, press 1. To continue, press 2.
68	To review, press 1.
69	Please enter the system password.
70	This message was sent on...
71	Please enter your password.
72	Please hold.
73	That is an invalid password.
74	We are temporarily unable to access this message.
75	You have no messages waiting.
76	The newly recorded prompt is...
77	The message has been deleted.
78	million
79	billion
80	dollar
81	dollars

Prompt number	Prompt
82	cent
83	cents
84	area code
85	and
86	by
87	.2 seconds of silence
88	.4 seconds of silence
89	.8 seconds of silence
90	up
91	down
92	half
93	third
94	fourth
95	fifth
96	sixth
97	seventh
98	eighth
99	ninth
100	tenth
101	point
102	points
103	thirds
104	fourths

Prompt number	Prompt
105	fifths
106	sixths
107	sevenths
108	eighths
109	ninths
110	tenths
111	sixteenths
112	thirty-seconds
113	sixty-fourths
114	weekdays
115	Resume recording at the tone.
116	At the tone, leave your message.
117	Recording has been aborted. The message will not be saved.
118	When finished, press...
119	(Not used)
120	(Not used)
121	A
122	B
123	C
124	D
125	E
126	F

Prompt number	Prompt
127	G
128	H
129	I
130	J
131	K
132	L
133	M
134	N
135	O
136	P
137	Q
138	R
139	S
140	T
141	U
142	V
143	W
144	X
145	Y
146	Z
147	Sunday
148	Monday
149	Tuesday

Prompt number	Prompt
150	Wednesday
151	Thursday
152	Friday
153	Saturday
154	twenty-one
155	twenty-two
156	twenty-three
157	twenty-four
158	twenty-five
159	twenty-six
160	twenty-seven
161	twenty-eight
162	twenty-nine
163	thirty-one
164	thirty-two
165	thirty-three
166	thirty-four
167	thirty-five
168	thirty-six
169	thirty-seven
170	thirty-eight
171	thirty-nine
172	forty-one

Prompt number	Prompt
173	forty-two
174	forty-three
175	forty-four
176	forty-five
177	forty-six
178	forty-seven
179	forty-eight
180	forty-nine
181	fifty-one
182	fifty-two
183	fifty-three
184	fifty-four
185	fifty-five
186	fifty-six
187	fifty-seven
188	fifty-eight
189	fifty-nine
190	sixty-one
191	sixty-two
192	sixty-three
193	sixty-four
194	sixty-five
195	sixty-six

Prompt number	Prompt
196	sixty-seven
197	sixty-eight
198	sixty-nine
199	seventy-one
200	seventy-two
201	seventy-three
202	seventy-four
203	seventy-five
204	seventy-six
205	seventy-seven
206	seventy-eight
207	seventy-nine
208	eighty-one
209	eighty-two
210	eighty-three
211	eighty-four
212	eighty-five
213	eighty-six
214	eighty-seven
215	eighty-eight
216	eighty-nine
217	ninety-one
218	ninety-two

Prompt number	Prompt
219	ninety-three
220	ninety-four
221	ninety-five
222	ninety-six
223	ninety-seven
224	ninety-eight
225	ninety-nine
226	hundreds
227	five hundred
228	thousands
229	ten thousands
230	hundred thousands (Mandarin)
231	ones
232	year
233	days
234	of
235	millions
236	billions
237	minus
238	negative
239	first
240	second
241	eleventh

Prompt number	Prompt
242	twelfth
243	thirteenth
244	fourteenth
245	fifteenth
246	sixteenth
247	seventeenth
248	eighteenth
249	nineteenth
250	twentieth
251	thirtieth
252	percent
253	left square bracket
254	backslash
255	return
256	enter
257	tab
258	backspace
259	delete
260	space
261	exclamation mark
262	period
263	ampersand
264	apostrophe

Prompt number	Prompt
265	plus
266	comma
267	dash
268	divide
269	colon
270	semicolon
271	less than
272	equal
273	greater than
274	question mark
275	open parenthesis
276	close parenthesis
277	asterisk
278	caret
279	underbar
280	single quote
281	double quote
282	right square bracket
283	tilde
284	pipe
285	open brace
286	close brace
287	dollar sign

Prompt number	Prompt
288	“@” symbol
289	celsius
290	fahrenheit
291	degrees
292	above
293	below
294	centigrade
295	degree
296	hour
297	minute
298	one (feminine version: French, German, Italian, Portuguese, Spanish)
299	twenty-one (feminine version: French, Italian, Portuguese)
300	eins (German)
301	one-hundred (Portuguese, Spanish)
302	two-hundred (Portuguese)
303	three-hundred (Portuguese)
304	four-hundred (Portuguese)
305	twenty-two (feminine version: Portuguese)
306	six-hundred (Portuguese)
307	seven-hundred (Portuguese)
308	eight-hundred (Portuguese)
309	nine-hundred (Portuguese)

Prompt number	Prompt
310	two (feminine) (Portuguese)
311	hours (Portuguese) o'clock (Japanese)
312	minutes (Portuguese)
313	months (Mandarin) month (Japanese)
314	over (Mandarin, Cantonese)
315	plural (Portuguese)
316	hundred million (Mandarin, Cantonese)
317	day (Japanese)
318	point (fraction: Mandarin, Cantonese, Japanese)
319	three thousand (Japanese)
320	eight thousand (Japanese)
321	1 day (Japanese)
322	2 days (Japanese)
323	3 days (Japanese)
324	4 days (Japanese)
325	5 days (Japanese)
326	6 days (Japanese)
327	7 days (Japanese)
328	8 days (Japanese)
329	9 days (Japanese)
330	7 (Japanese)
331	9 (Japanese)
332	1 minute (Japanese)

Prompt number	Prompt
333	6 minutes (Japanese)
334	8 minutes (Japanese)
335	10 minutes (Japanese)

Appendix B: Software license manager

The Symposium OPEN IVR license manager is programmed with the details of your system configuration. It tracks which Symposium OPEN IVR features are in use, how many users are licensed to use those features, capacities, and resource allocation. The license manager starts at boot time and transparently issues licenses for the software.

This appendix provides information about the following topics related to the license manager:

- licensing scheme
- MRS and AP software components and behavior with the license manager
- license server node and client node tools
- license Manager error messages

Licensing scheme

The following features are licensed by *display:*

- IVR Developer (the licensed application development option software)
- Graphical Prompt Manager

ATTENTION

If you change your system configuration, or purchase additional MRSs or features, a new license is required.

License by display

Licensing a feature by *display* means that the feature checks out one license each time the feature's user interface appears on a different display.

For example, with the development package you can bring up as many Application Editors as you want on a single display. Any time you bring up an Application Editor on another display or send an Application Editor to another display, AP software will check out another development software license.

License by runtime instance

Licensing a feature by *runtime instance* means that each time you start AP software represents one runtime license.

The following features are licensed by *runtime instance*:

- SQL Link
- Host Link
- SNMP Interface
- ADSI
- FAX
- ASR
- TTS
- Web

License check failure

A license check failure may be caused by

- the absence of a License Manager security keylock
- a faulty License Manager security keylock connection
- detection of a different License Manager security keylock for a system other than the specific one for which it was manufactured.

In the event of a license check failure, contact Nortel Customer Service for assistance. If the failure is not rectified, the system will shut down after four days (96 hours). Once the failure is rectified, the scheduled shutdown will be canceled.

> ***Note:*** The interval of four days can be adjusted to a lower value, on a site-specific basis; however, the interval cannot be increased.

Failure upon installation

If the check fails at MRS or AP start-up, an error message is logged to the `kld.log` file. This message includes a timestamp indicating when the message was logged, and the date and time on which the system will shut down if corrective action is not taken. The message is also displayed on the X-console window. To ensure that the license file check failure is noticed in time to take corrective action, certain site-specific actions can be triggered through the severity file, such as sending an e-mail to an administrator, or paging appropriate personnel.

If the AP fails the start-up license check, the AP will not start. If the MRS fails the start-up license check, the MRS will start, but with zero resources.

Post-installation failure

After successful start-up, if a subsequent periodic check fails, an information message is logged indicating that the keylock was absent during a license check. Any running applications, which previously passed a licensing check and successfully checked out resources, will continue to run independently of the success or failure of licensing checks by other applications.

AP software components and behavior

OPEN IVR provides two types of IVR systems: Runtime, and Development systems. The following sections describe how the Symposium OPEN IVR license manager affects each component of OPEN IVR software.

AP software runtime

Runtime systems provide a cost effective means of implementing an IVR system without the cost of application development software. With a Runtime system, application development is performed by Value Added Distributor (VAD). The finished applications are then loaded and run on the Runtime system.

The runtime package is licensed by channel — each channel configured to run an application requires one license. If OPEN IVR Runtime cannot get a license, it will not come up. You will need a Development license to run the IVR Developer. The IVR Developer allows you to change and develop OPEN IVR applications.

AP software development

Development systems include all the features of the Runtime system, with the addition of the licensed application development software. The development package is designed to stand alone or work with AP software. A licensed tool, Application Editor, enables a customer to develop their own applications in-house.

The following tools are available only on Development systems:

- write/save functions of the Application Editor
- ability to create user functions for IVR applications
- write/save functions of the Customizable User Cell Builder

  Note: The Customizable User Cell Building (CUCB) is an option that is only available on systems with a SCO development license.

The Development AP is offered with a choice of two development licenses, as outlined below:

- **Dedicated Development Environment (DDE)**

  This option permits a single developer and one other user, such as a Service Engineer, to operate concurrently on a single AP, with practical limitations.

- **Shared Development Environment (SDE)**

  This option permits up to four developers and one other user, such as a Service Engineer, to operate concurrently on a single AP, with practical limitations.

Each invocation of the Application Editor represents one license (unless they are being displayed on the same monitor). If you exceed the license limit, the Application Editor will come up, but it will inform you that "Save" and "Save As" functions are disabled. This maintains your license agreement, but allows you to bring up an application for "read-only" access. You need a runtime license to load and run your voice applications on the MRS.

Upgrades from the Runtime License to a development license (either DDE or SDE) are available. For instructions on upgrading a system, see "Upgrading from a runtime system to a development system" on page 14-39" in the *Symposium OPEN IVR 4.0 Installation, Upgrade, and Maintenance Guide*.

Graphical Prompt Manager

This option gives you access to the Graphical Prompt Manager only. This feature is licensed by display the same way the development package is licensed. If you exceed the license limit, the Prompt Manager will come up, but you will not be able to save or play voice files.

The Graphical Prompt Manager option allows you to view the waveform of a voice prompt. You can edit this waveform in order to create custom voice prompts.

SQL Link

This option allows you to run OPEN IVR applications that access SQL databases. You can still place SQL cells and develop SQL applications without this option, but you must have this option in order to load and run the applications on the MRS. The OPEN IVR SQL options include interfaces to Ingres, Oracle, SyBase, and Informix database management systems — four separate options in total. These options are of use only when used in conjunction with the Runtime package and are licensed by runtime instance.

ADSI

This option allows you to load and run ADSI applications. You can still place ADSI cells and develop ADSI applications without this option, but you must have this option to run them. The license manager will not allow you to load an ADSI application onto the MRS without this option. This option is useful only when used in conjunction with the Runtime Package.

Host Link

This option allows your voice applications to access data residing on a remote host computer. You can still place COM cells and develop Host Link applications without this option, but you must have this option to run them. Although the license manager allows you to load Host Link applications without the proper license, but the application will exit (error branch) when the COMI is encountered.

The Host Link currently supports 5250, 3270, and VT100 communication protocols. The Host Link is licensed by protocol. Each different communication protocol used by an application represents one license. The total number of sessions you can support is determined by the host communication hardware.

FAX

The FAX option enables you to load and run OPEN IVR applications that can take advantage of Fax functionality.

ASR

The ASR *option enables you to load and run* OPEN IVR applications that can take advantage of ASR functionality.

TTS

The TTS option enables you to load and run OPEN IVR applications that can take advantage of Text-to-Speech (TTS) functionality.

World Wide Web

World Wide Web (WWW) integration software is available as a separately-purchased option. Web integration functionality enables application developers to integrate with and run OPEN IVR applications on the Web.

License server node and client node tools

Symposium OPEN IVR software provides a set of administrative tools for interacting with both the license server node and the client node(s). Refer to Chapter 9, "Tools," for additional information about license client-node tools.

CAUTION

Risk of system failure

Do not modify the contents of the license file without the advice of Nortel Customer Service.

License server node tools

This section presents a listing of the tools that are shipped with license manager software for installation on the license server node.

Note: To display the version number for any of the tools, invoke the tool using the `-v` option.

lmcksum

The `lmcksum` tool performs a checksum of the license file in order to verify data-entry errors if you edit the license file. It prints a line-by-line checksum for the file and an overall file checksum. If the license file contains `chksum=`*nn*"attributes, then the lines with errors are automatically indicated. This can be used to verify that the license file has not been corrupted. In particular, this tool will indicate whether a certain feature line is invalid.

To perform a checksum procedure on a license file, specify **`-c license_file`** on the command line after `lmcksum`. An example of the output follows:

```
lmcksum - Copyright (C) 1989, 1994 Globetrotter
Software, Inc. lmcksum: using license file
"10050@localhost"

189: SERVER speedy 08002b32bl61 2837

66: DAEMON vtek

8: FEATURE fl demo 1.000 O1-jan-99 0
3B2BC33CE4ElB8F3AOBF nn 08002b32bl61

109: (overall file checksum)
```

lmdiag

The `lmdiag` tool enables you to diagnose problems when you cannot check out a license.

Usage:

`lmdiag [-c` *`license_file`*`] [-n] [`*`feature`*`]`

where

`-c` *`license_file`* is the path name for the specified file that `lmdiag` is to diagnose.

`-n` specifies noninteractive mode. In non-interactive mode, `lmdiag` does not prompt for input. In addition, extended-connection diagnostics are not available in noninteractive mode.

`feature` specifies the feature for `lmdiag` to diagnose (for example, genAP-odt-runtime).

If you do not specify a feature, lmdiag operates on all features in the license file(s) in the designated path. First, `lmdiag` prints information about the license, then `lmdiag` attempts to check out each license. If the checkout is successful, `lmdiag` indicates a success status. If the checkout fails, then lmdiag indicates the reason for the failure.

If the checkout fails because lmdiag cannot connect to the license server, then you can run "extensive connection diagnostics." These extended diagnostics attempt to connect to each tcp port on the license server node and can detect whether the tcp port number in the license file is incorrect. The lmdiag tool indicates each port number that is listening and tells you if the port is an lmgrd process. If `lmdiag` locates the vendor daemon for the feature it is testing, then lmdiag indicates the correct port number for the license file in order to correct the problem.

> ***Note:*** `lmdiag` is a client tool as well. Refer to Chapter 9, "Tools," for additional information.

lmdown

The `lmdown` tool allows for the graceful shutdown of all license daemons (both `lmgrd` and all vendor daemons) on all nodes associated with your license file.

Usage:

`$lmdown [-c` *`license_file`*`]`

The daemons that will be shut down will be those specified on the command line. In addition, the `lmdown` tool takes the `-c` *`license_ file_path`* argument to specify the license file location. Nortel recommends that you use the command `vlm stop` to take down the license manager. The `vlm start/stop` command requires root privileges.

lmremove

The `lmremove` tool enables a system administrator to remove a single user's license for a particular feature. This could be required in the case where the licensed user was running the software on a node that subsequently crashed. In these cases, due to a limitation in the way TCP works, it can take several hours for the license server to detect that the reserved licenses on a client node should be released. In this situation, the license may remain unusable. This tool forces the licenses to return to the pool and become available again.

Usage:

`lmremove [-c` ***`file`***`]` ***`feature user host display`***

The ***`user host display`*** information must be obtained from the output of `lmstat -a`.

`lmremove` removes all instances of ***`user`*** on ***`host`*** on ***`display`*** from usage of ***`feature`***. If the optional "`-c` ***`file`***" is specified, the indicated file is used as the license file.

Consider this sample `lmstat -a` output:

```
"genAP-odt-runtime" v1.000,vendor vtek

9 floating licenses

joe cloud7 /dev/tty05 (vl.000) (cloud9/7654 102), start
Fri   10/29 18:40
```

In this example, the user is `joe`, the host is `cloud7`, the display is `/dev/tty05,` and the feature is `genAP-odt-runtime`.

To remove this license, type the following command:

`lmremove` `genAP-odt-runtime` ***`joe cloud7 /dev/tty05`***

lmreread

The `lmreread` tool tells the license manager to read the license file and update its internal information accordingly. In addition, all pre-existing vendor daemons will be signaled to reread the license file for changes in feature licensing information.

Usage:

```
lmreread
```

> ***Note:*** If the `-c` option is used, the license file specified is read by `lmreread`, not by `lmgrd`; `lmgrd` rereads the file it read originally. In addition, `lmreread` cannot be used to change server node names or port numbers.

Nortel recommends that, if you change the license file, you use `install_lm` and select option `2: Upgrade existing license installation.` In addition, whenever a `license.dat` file is changed, you must restart all OPEN IVR systems that use this file. See the information following this section for complete directions.

lmstat

The `lmstat` tool enables license manager users to monitor the current status of all network licensing activities. The tool allows a user to monitor license management operations, such as status of the license manager and vendor daemons, and licensed users and user nodes for individual features.

Usage:

```
lmstat [-a] [-S [daemon]] [-f [feature_name]] [-i
[feature_name]] [-s [server_name]] [-t value] [-c
[license_file]] [-A]
```

where

-a d	displays everything. If there are several active users, specifying the -a option in the lmstat command line can generate an abundance of network activity.
-S [*daemon*]	restricts the output to the named daemon and to the features and users of that daemon. An option on the network may exist that is managed by license daemons from other vendors.
-f [*feature name*]	Lists users of the named feature (for example, genAP-odt-runtime)
-i [*feature_name*]	prints information about the named feature, or about all features if no feature is given in a table format.
-s [*server_name*] d	displays the status of the named server node. If you simply type **-s**, then the status of all server nodes is displayed. License servers from other vendors' software may be available on the network. Use the node name of the license server for OPEN IVR software.
-t value	sets the lmstat time-out value to "value.
-c [*license_file*]	informs lmstat to use the named file.
-A	lists all active licenses to "value.

Note: lmstat is a client tool as well. Refer to Chapter 9, "Tools," for additional information.

vlm

The `vlm` tool uses the commands `vlm start` or `vlm stop` to manually start or stop the license manager. Currently, the license manager automatically starts up when the system is booted. The vlm start/stop command requires root privileges.

vlm_options

`vlm_options` is a Nortel-created tool that displays information about each Nortel option in the license file and tests whether each option in the license file can be reserved.

Usage:

`-[t]`est tests the reservation of options in the license file defined by

`LM_LICENSE_FILE.`

`-[s]`how displays information about the options in the license file.

The data that is provided includes

- option name
- OPEN IVR version number
- expiration date
- number of licenses

Changing the host name of the license server

To change the host name of the license server, follow these steps.

1. Log in to the license server node as **`root`**.
2. Change directories (`cd`) to the directory in which the license server is installed.
3. Insert the floppy disk containing the license file into the appropriate drive.
4. Extract the file from the floppy using the tar command (that is, **`tar xvf /dev/rfd0135ds18`** for drive A).
5. Execute the command **`cd ..`**
6. Run the command **`./install_lm`**.
7. Select option 2, `Upgrade existing license installation`, from the option list.

8 Answer **y** to the question to the question that begins “A license file currently...”

9 Using either vi or nedit, replace the existing host name on the first line of the file `license.dat` with the new host name.

10 Save, and exit from the file.

11 From the command line, execute **`vlm stop`**.

12 From the command line, execute **`vlm start`**.

Perform the following operations for each OPEN IVR system on your network.

1 Log in as **`root`**.

2 Type **`gen stop`**.

3 Change directories (`cd`) to the area where OPEN IVR software is installed.

4 Change directories (`cd`) to the `sys_files` directory.

5 Using either vi or nedit, bring up the file `lic_server.conf`.

6 Replace the existing license server node name with the new node name on the line beginning with `LM_LICENSE_FILE`.

7 Save the file and exit from the editor.

8 At this point, it is imperative that you verify that all editing sessions and prompt manager sessions are shut down.

9 From the command line, type **`gen start`**.

10 You can now restart your editing sessions and prompt manager sessions.

Note: Nortel recommends that you do not edit the license file except to change the node name. If you are instructed to change information in the license file, contact your Nortel Customer Service representative.

CAUTION

Risk of system failure

Nortel recommends that you do not edit the license file except to change the node name. If you are instructed to change information in the license file, contact your Nortel Customer Service representative.

Glossary

This glossary provides definitions of many of the terms as used in this guide. Some of these terms may have additional meanings not described here.

acoustic coupler

A device (such as an Audio Interface Unit) used to interface between sound equipment and a port on the MRS/AP.

Administration Tools

A set of tools, accessible from the Symposium OPEN IVR Control Panel, used to configure and control the Symposium OPEN IVR system.

agent

A person whose primary role is to handle customer calls that are transferred from a queue within a call center.

ANI

Automatic Number Identification. A protocol implemented in some trunk cards that records the calling number.

ANSI

American National Standards Institute.

AP

Application Processor. A computer or workstation running the AP software in a distributed configuration. Symposium OPEN IVR combines one or more Multimedia Resource Servers (MRSs) with a general-purpose Application Processor (AP) to provide a versatile application development and run-time environment. The AP provides the environment for developing, managing, and controlling the IVR applications.

AP software

Nortel's premiere voice application development and management software package that runs on the Application Processor (AP). Application development capabilities are a licensed feature of AP software, through IVR Developer software. See also *MRS/AP*.

application

1 In Symposium OPEN IVR, a customized program that controls activity on one or more telephone trunks connected to an MRS voice system.

2 On a host computer, any type of program that carries out a task.

application developer

A person who creates Symposium OPEN IVR applications.

Application Editor

A utility used to graphically create or edit interactive voice response applications.

application processor

See AP.

audio conversion software package

A third-party software package which is used to record, edit, convert and optimize audio recordings.

Automatic Number Identification

See ANI.

branch

A pathway from one cell in an application to the next cell.

buffers

A part of computer memory used to store information from one cell and pass it to another cell.

call flow

A diagram of a Symposium OPEN IVR application.

caller

A person whose phone call is received or originated by a Symposium OPEN IVR application.

cell

The basic element of an application. Each cell causes some action to be performed—for example, playing a prompt to a caller. Each cell has a set of branches to other cells. After the cell performs its action, it determines which branch the application should follow to the next cell.

channel

1 A telephone trunk within a cluster of MRSs.

2 A path of communication between the AP and a communications or transmission facility. Channel sequences can span multiple MRSs, and their numbering starts at zero (0). Also referred to as a **port**.

CO

Central Office

Control Panel

The Symposium OPEN IVR panel containing the buttons from which you can access the Administration, Information Database Editor, Report, Application, Prompt Management, and SmartHelp tools.

database

A collection of related information arranged for ease and speed of retrieval.

Dialed Number Identification Service

See DNIS.

DID

Direct inward dialing. A protocol used by some telephone equipment that allows callers to dial directly to an extension within a telephone system without going through a switchboard.

Direct inward dialing

See DID.

DNIS

Dialed Number Identification Service. A feature of 800 and 900 numbers, in which the number dialed or a portion of it is sent to the MRS and stored in the DIGITS buffer in OPEN IVR.

DTMF

Dual Tone Multi-Frequency. Touchtone (push button) dialing. DTMF is used to encode digits over analog telephone lines. Applications can collect information from callers by having them press telephone keys to create DTMF tones.

Dual Tone Multi-Frequency

See DTMF.

EXEC

The cell that executes an OPEN IVR application on the current channel.

falsing

A condition in which certain frequencies in a voice recording are incorrectly interpreted as DTMF tones. In some applications, false DTMF tones may cause the system to perform unwanted activities, such as selecting menu choices, terminating playback, or hanging up prematurely.

field

The specific location of information (data) within a record in a relational database.

gain

The increase in signal power, measured in decibels, when the signal is boosted by an electronic device.

ground start

A method of signaling on the trunk in which one side of the two wires (typically the ring wire) is momentarily grounded to obtain a dial tone. This type of signal is normally used with PBXs.

hook-flash

Depressing and releasing the plunger or handset-cradle on a telephone.

Host link

The ability of Symposium OPEN IVR to communicate with other host computers supported by one of the OPEN IVR gateway products.

host name

The host name is used to represent the name of each server in an IVR system configuration.

Information Database

See database.

Information Database Editor

A utility used to create a message or information database, and to edit an information database.

IVR

Interactive Voice Response

IVR Developer

A licensed component of AP software that provides application development tools to graphically create or edit interactive voice response applications.

loopstart

A method of signaling on the trunk in which a supervisory signal is given (by taking the phone off the hood). Loopstart seizes the line by bridging the resistance of the tip and ring wires of the telephone line to obtain a dial tone. Loopstart signalling is normally used for single lines or key systems.

MF tones

Multifrequency tones. These are tones used by ANI. Symposium OPEN IVR applications can receive and store MF digits when the ANI option is in use.

MRS

Multimedia Resource Server. Symposium OPEN IVR combines one or more Multimedia Resource Servers (MRSs) with a general-purpose Application Processor (AP) to provide a versatile application development and/or run-time environment.

MRS/AP

A single unit that runs a “folded” configuration; that is, a configuration that includes both the Multimedia Resource Server and the Application Processor. The MRS/AP contains the functionality of the other platforms, but in a single hardware unit.

MRS/Rack

A unit comprising a rack-mountable Application Processor and a rack-mountable Multimedia Resource Server. The MRS has an unfolded configuration interface with the AP via Ethernet or Token Ring. Multiple MRS/Racks can be installed in racks and stacked to take up less room.

MRS/Tower

The MRS/Tower platform is comprised of an Application Processor and a Tower Multimedia Resource Server. The MRS has an unfolded configuration interface with the AP via Ethernet or Token Ring.

multifrequency tones

See MF tones.

Multimedia Resource Server

See MRS.

node

A grouping composed of one or two APs connected to one to four MRSs. An MRS/AP is considered a node.

parameter

A variable used to define the function of Symposium OPEN IVR cells. You set parameters in the parameter window for each cell (when using the Application Editor), or in the cell window (when using the character-based Application Editor).

PBX

Private branch exchange. A private phone system allowing communication within a business and between the business and the public telephone system.

port

A path of communication between the AP and a communications or transmission facility. Port sequences can span multiple MRSs, and their numbering starts at zero (0). Also referred to as a **channel**. *See also* trunk.

private branch exchange

See PBX.

prompt

A voice recording that helps lead a caller through a Symposium OPEN IVR application.

Prompt Management tools

A set of tools, accessed from the Symposium OPEN IVR Control Panel, that is used to record, load, and update prompts.

record

1 To store sound on tape or disk for later play back.

2 In a database, a group of related data items (fields) treated as one item.

Reorder tone

A reorder tone is a fast busy or channel busy tone, which is applied 120 times per minute. The tone means that all switching paths are busy, all toll trunks are busy, there are equipment blockages, the caller dialed an unassigned code, or the digits dialed were scrambled.

Reports tools

A set of tools, accessed from the Symposium OPEN IVR Control Panel, that is used to generate reports about the system's activities.

Send Fax

See SFAX.

SFAX

Send Fax. Cell that sends one or more faxes to a destination fax machine.

SQL

Structured Query Language. A type of relational database.

Structured Query Language

See SQL.

subscriber

A person serviced by a voice processing application (such as voice mail).

system administrator

A person responsible for configuring MRSs, installing and running Symposium OPEN IVR applications, managing prompts, and running reports.

telco

Telephone company.

Terminal Resource Server

See TRS.

TRS

Terminal Resource Server. The Symposium OPEN IVR process that manages the assignment of system resources to the Host Link products.

trunk

A communication line between two switching systems, frequently referred to as a port. Trunk numbering starts at 1.

voice storage number

See VSN.

VSN

Voice storage number. Internal numbering system used by the MRS for prompts, messages, and faxes (if the fax option is installed); Symposium OPEN IVR uses its own numbering system.

wink

A momentary interruption in single frequency tone that indicates the distant central office (CO) is ready to receive the digits that were just dialed.

X-Window Application Editor

See XAE.

XAE

X-Window Application Editor. Another term for the Application Editor.

XAE

X-Window Application Editor. Another term for the Application Editor.

.two

Index

Symbols

Of Digits field, 2-35
Of Reserved Audio Paths field, 2-18

A

access string, 8-3
accessing
  Application Management, 3-8
  application management tools, 3-7
  Prompt Loading Facility, 4-17–4-18
  SNMP configuration utility, 8-2
  System Application Monitor, 7-10–7-13
  System Configuration, 2-8–2-9
  System Monitor, 7-1–7-2
  System Prompt Manager, 5-3
  See also invoking
ACD
  Agent Position and testing, 3-3
  Automatic Overflow and testing, 3-3
  queue and testing, 3-3
action bit flag, 7-18
Action index, 7-18
active Protocol, 8-11
adding
  directories, 3-10
  reboot.sai script, 3-27–3-28
  scripts, 3-21–3-23
admingen, 9-2
  start, 1-20
  stop, 1-20
  tool, 9-1
Administration tools, 1-3–1-4
ADPCM prompts, compressing, 5-1
ADSI, 2-12
  option licensing, B-6
ADSI Support? field, 2-12
ADVISORY severity class, 7-17
alarm file, 7-14
alarms, resetting minor, 9-9
ANI trunk type, 2-21, 2-34
ANI2
  trunk initialization type, 2-22, 2-31
  trunk type, 2-25
ANI3
  trunk initialization type, 2-22, 2-32
  trunk type, 2-25
ANI4
  trunk initialization type, 2-22, 2-33
  trunk type, 2-25
AP, 7-2
  backing up prompts, 4-56
  configuring SNMP, 8-4
  configuring SNMP on, 8-2–??
  control types, 2-15, 2-16, 2-18
  node name, 7-2
  restoring prompts, 4-58
AP software
  accessing, 1-2
  auto-restart feature, 1-19
  bring down forcefully, 9-7
  bring down gracefully, 9-7
  development
    Shared Development Environment (SDE), B-5
  development package licensing, B-4
  events, 8-3
  features, 1-1
  message databases. *See* message databases
  restarting, 9-7
  runtime package licensing, B-4
  starting, 9-1
  stop processes forcefully, 9-8
  stopping, 9-1
  types of events generated by, 8-4
  variables, 8-9–8-12
  version, 9-11

AP software development
Dedicated Development Environment (DDE), B-5
AP software events, 8-4
Application Editor, 1-6, B-4
and response times, 3-2
features, B-4
Application field, 7-7
Application Management, 3-1–3-33
exiting from, 3-32
menu, 3-7
tools, 3-7
application phase, 2-23
Application Processor Control Type field, 2-18
Application tools, 1-6
applications
assigning channels to, 3-14–3-15
changing, 3-1–3-5
developing, 3-1–3-5
gathering call statistics from, 6-1–6-5
Initial ActionTemplate, 8-12
loading, 3-11–3-14, 3-20–3-26
managing, 3-1–3-33
phases for testing, 3-2
PingTemplate
Ping Template, 8-12
PingValue, 8-12
reassigning channels to, ??–3-20
scheduling, 9-19–9-21
specific prompts, 4-6
starting, 3-16–3-17, 3-20–3-26
stopping, 3-5, 3-28–3-30
Table variable, 8-11
testing, 3-1–3-5
unloading, 3-31
applying changes, 2-38
ASR option licensing, B-6
ASR Support? field, 2-12
audio paths, reserved, 2-18
audio tape
recording prompts, 4-8, 4-9
recording prompts with DTMF tones, 4-44–4-49
recording temporary prompts, 4-28–4-30, 4-35–4-39
audit tool, 9-2, 9-2, 9-17–9-18
invoking, 9-17
audit_data.asc file, 6-5, 6-13, 9-36
audit_hdrs.asc file, 6-5, 6-13, 9-36
audit_stat.d file, 6-2
backing up, 6-14
converting to CSV format, 9-36–9-39
Automatic Number Identification. *See* ANI
auto-restart feature, 1-19

B

Back up a list of prompts screen, 4-56
background menu, 1-18
backing up
files, 9-2, ??–9-3, 9-12, 9-28–9-31
prompts, 4-3, 4-56–??, 5-17
statistics, 6-14
statistics file, 9-11
voice segment files, 3-5
backup destination file, 9-28
Backup Now option, 9-31
batch mode
changing a group of VSNs in, 5-21–5-22
changing prompts in, 5-16–5-22
Baud Rate (9600) field, 2-17
biasing of cassette decks, 4-14
booting the AP, 1-19
bup, 9-2, 9-3
buttons, 1-11

C

Call Audit Enabled parameter, 6-3–6-4
Call Audit Report, 6-8–6-9
display, 9-9
call auditing
enabling or disabling, 9-10
Call Detail Report, 6-7
display, 9-9

call information collected, 6-2
call sequence
  phases in, 2-23
  trunk initialization types in, 2-24–2-34
call statistics, gathering, 6-1–6-5
calls, number received, 1-5
cassette decks, biasing 4-14
cassette, copying reel-to-reel recording to, 4-14
Cell Builder. *See* Customizable User Cell Builder
changing
  applications, 3-1–3-5
  error messages, 7-17–7-20
  license server node name, B-13
  prompts, 5-12–5-13
  prompts in batch mode, 5-16–5-22
  scripts, 3-24–3-26
  severity classes, 7-16, 7-17
  severity file, 7-15
  waveforms, 5-11–5-13
channel
channels
  assigning to an application, 3-14–3-15
  board, 7-5
  Channel ID field, 7-7
  channel numbers, 3-9
  choosing, 4-22
  choosing numbers for, 3-9–3-10
  displaying, 9-3, 9-3
  Index variable, 8-14
  initializing, 4-21
  reassigning to applications, 3-20
  State variable, 8-14
  Table variable, 8-14
  Type variable, 8-14
chdisp tool, 9-3
choosing
  channel numbers, 3-9–3-10
  channels, ??–4-22
  message numbers, 2-3–2-7
  prompt numbers, 2-3–2-7, 4-4–4-6
  trunk numbers, 3-9–3-10
  trunks, 4-11–4-13
circ tool, 9-3–9-4
clearing transaction log file, 9-9
client tools, license manager, 9-14–9-16
closing. *See* exiting
cnvrt tool, 9-5
  exiting, 9-5
  invoking, 9-4
COM cells, B-6
Comment window, 5-10
Community
  field, 8-3
  String parameter, 8-5
compensating for telephone-line frequency response, 4-15
compression amplifier, 4-15
configuration
  dsysf tool, 9-6
  management platform, 8-4
  MRS, 2-15, 2-16, 2-20
  nodes, 2-13–2-14
  SNMP, 8-2–8-6
  trunks, 2-21–2-37
Connection
  Type field, 2-17
  Primary variable, 8-12
  Status variable, 8-12
  Table variable, 8-12
  To variable, 8-12
console actions, 8-4
context-sensitive help, 1-8
Control Panel, 1-3
  accessing System Configuration from, 2-8
  exiting, 1-17, 3-32
  restoring, 1-18
control types, AP, 2-15–??, 2-16, 2-18
converting
  audit_stat.d to CSV format, 9-36–9-39
copying
  files, 3-11
  range of prompts, 5-13
  waveforms from one prompt to another, 5-15
core process variables, 8-10, 8-13
creating. *See* adding
CRITICAL severity class, 7-17
csc_events file, 9-5

custom prompts, 2-5
Customizable User Cell Builder, 1-7
  write/save functions, B-4
customized reports, creating, 6-14
cutting
  range of prompts, 5-13
  See also deleting

D

databases, 1-5
  dump, 9-6
dbx Type I noise reduction, 4-14
decimal number, converting to hexadecimal, 9-5
dedicated acquisition type channels, 3-3
  testing, 3-3, 3-5
Dedicated Development Environment (DDE), B-5
de-esser, 4-15
deleting
  prompts, 4-3, 4-53–4-54
  users' licenses, B-10
  See also cutting
DELV cell, 9-19
Detect Falsing? field, 4-19
developing applications, 3-1–3-5
development system
  features, B-4
Device Name field, 2-17
devnt tool, 9-5
diagnosing license problems, 9-14–9-15, B-8–B-9
DID trunk type, 2-21, 2-34
DID1 trunk initialization type, 2-22
  call sequence, 2-27
DID3 trunk initialization type, 2-22
  call sequence, 2-28
DID4 trunk initialization type, 2-22
  call sequence, 2-29
DID5 trunk initialization type, 2-22
  call sequence, 2-30
DID/ANI Digits field, 7-7
Direct Inward Dial. *See* DID
Direction field, 2-34, 7-7
directories, 3-10–3-11
  adding, 3-10
  development, 3-11
disabling call auditing, 9-10
Disk Mirroring Support field, 2-12
Disk Usage display, 7-4
display, licensing by, B-2
displaying
  channels, 9-3, ??–9-3
  port status, 7-6–7-8
dmsgd tool
  invoking, 9-6
Dolby B noise reduction, 4-14
Dolby C noise reduction, 4-14
Dolby SR noise reduction, 4-14
dpnd tool, 9-13
dsysf, 9-6
DTMF tones, 2-22
  recording prompts with, 4-10
  recording temporary prompts with, 4-39–4-49
dtrkf tool, 9-6
Duplicate Error Log Path field, 2-12

E

Edit menu, 5-4, 5-10
editing. *See* changing
editor, 9-9,
empty vsn.data files, 9-8
enabling call auditing, 9-10
Encoding field, 5-5, 5-9
End of Recording Key field, 4-31, 4-40
equalizer, 4-15
Error code column, 7-17
error messages
  changing, 7-17–7-20
  mapping actions to individual, 7-18
/etc/gen, 9-6

Ethernet
connection, 7-3
node name, 2-17
EVENT
buffer table, 6-5
cells, 6-2, 6-4–6-5, 8-4
event.log file, 7-14
events
designating SNMP destinations for, 8-2
listing scheduled, 9-22–9-23
monitoring, 1-5
scheduling, 9-9, 9-19–9-21
types, 8-4
unscheduling, 9-21–9-22
Exit option, 3-32
exiting
Application Management, 3-32
cnvrt menu, 9-5
Control Panel, 1-17, 3-32
Port Status window, 7-8
Prompt Loading Facility, 4-61
System Application Monitor, 7-13
exp command, 6-13
exp command. *See* export tool
export tool, 6-5, 6-13, 9-7, 9-36–9-40
invoking, 9-36
exporting statistics, 6-13

F

falsing, 4-51
fatal conditions, 8-4
FATAL severity class, 7-17
FAX option licensing, B-6
features
AP software, 1-1
Customizable User Cell Builder, B-4
development system, B-4
license by display, B-2
File menu, 5-4
files
backing up, 9-2, ??–9-3, 9-12, 9-28–9-31
copying, 3-11
restoring, 9-12, 9-32–9-33
function keys, Application Management, 3-8
functions
write/save, B-4

G

gen reset command, 1-20
gen shut command, 1-20, 9-7
gen start command, 1-20
gen stop command, 1-20
gen tool, 9-6
Generate AUDIT Event? field, 6-5
Generate SNMP Event? field, 6-5
generating. *See* running
gmessage tool, 9-13
gnetconfig command, 8-2
Graphical Prompt Manager option licensing, B-5
graphical text editor, 9-9
greset command, 1-19, 2-38, 9-7

H

halting applications, 3-28–3-30
handle number
converting to VSN number, 9-5
converting VSN number to, 9-5
hang-up phases, 2-23
help, 1-8
hexadecimal number, converting decimal number to, 9-5
host communications variables, 8-11
Host Link
applications, B-6
option licensing, B-6

I

IANA, 8-7
IBM Netview, 8-4
inactive trunk type, 2-21, 2-34
individual prompts, recording, 4-9
Information Database Editor, 1-5
information databases, 1-5
Initial Action Template, 8-12
initialization phase, 2-23
Initialization Type field, 7-7
installing
  SNMP, 8-1
  sound equipment, 4-15
  temporary prompts, 4-49–4-53
Internet Assigned Numbers Authority, 8-7
invoking
  audit tool, 9-17
  cnvrt tool, 9-4
  dmsgd tool, 9-6
  export tool, 9-36
  See also accessing
isolated test environment, creating, 3-2–3-5

K

KEY column, 7-16
keyboard, using, 1-13–1-14
killall.sh, 9-8

L

LDLV cell, 9-19
Length field, 5-9
LEVEL column, 7-16
license by display, B-2
license daemons, stopping, B-9
license manager, B-1
  client tools, 9-14–9-16
  features
    license by display, B-2
  server tools, 9-14–9-16
license problems, diagnosing, 9-14–9-15, B-8–B-9
license server, changing node name of, B-13
licensing
  AP software development, B-4
  by display, B-2
  by runtime instance, B-2
  deleting licenses, B-10
  runtime package, B-4
List of Prompts to Back Up field, 4-56
List of Prompts to Record field, 4-31
List of Prompts to Restore field, 4-59
listing scheduled events, 9-22–9-23
live system, managing applications on, 3-1–3-5
lmcksum tool, B-8
lmdiag tool, 9-14–9-15, B-8–B-9
lmdown tool, B-9
lmremove tool, B-10
lmreread tool, B-11
lmstat tool, 9-15–9-16, B-11–B-12
loading
  applications, 3-11–3-14, 3-20–3-26
  new prompts, 4-2
local prompts, 2-3, 2-5, 4-4
  maximum number of, 2-11
locking the screen, 1-15–1-16
logcp tool, 9-13
logging in, 1-2
logging out, 3-33
logicalUnitHostConnection variable, 8-11
logicalUnitProg400Detected variable, 8-11
logicalUnitProg500Detected variable, 8-11
logicalUnitStatus variable, 8-11
logicalUnitTable variable, 8-11
loopstart trunk initialization type, 2-22
  call sequence for, 2-26
low-frequency energy, 4-15

M

MAJOR severity class, 7-17
makedepend.drv tool, 9-13
Management Information Base, 8-7–8-14

management platform
configuring, 8-4
reporting AP software events, 8-3
reporting AP software events, 8-4
mapping actions to individual messages, 7-18
Maximum # Of Local Prompts field, 2-11, 2-14
Maximum # Of System-Wide prompts field, 2-11, 2-14
MB1, 1-10
MB2, 1-10
MB3, 1-10
menu
root or background, 1-18
See pull-down menus
message databases, 1-5
Message string, 7-20
messages
choosing numbers for, 2-3–2-7
converting to VSNs, 9-4, ??–9-5
description, 2-3
See also error messages
methods for recording prompts, 4-6–4-10
MIB. *See* Management Information Base
microphone, 4-14
recording prompts from, 4-7
milestone, 6-5
minor alarms, resetting, 9-9
MINOR severity class, 7-17
mkdir command, 3-10
mkproto.drv tool, 9-13
monitoring
network licensing activities, 9-15–9-16, B-11–B-12
OPEN IVR, 7-1–7-20
mouse
using, 1-10–1-11
using to edit waveforms, 5-11
mouse button 1, 1-10
mouse button 2, 1-10
mouse button 3, 1-10
moving ranges of prompts, 9-8
MRS
Configuration screen, 2-16, 2-18
MRS ID, 7-2, 7-4, 7-7
MRS
configuring, 2-15, 2-20
configuring SNMP on, 8-5–8-6
menu, 5-4
multilingual prompts, 2-5, 4-5
node name, 7-2
Node Name field, 2-17
Number field, 4-19, 4-56, 4-59
recording prompts directly, 4-9
recording prompts with DTMF tones directly, 4-41–4-44
recording temporary prompts directly, 4-27–4-28, 4-32–4-35
software variables, 8-12–8-14
toggle button, 7-3
Type field, 2-17
MRS/AP
configuring SNMP,8-2, 8-4
Multimedia Resource Servers. *See* MRS
mvpmt, 9-8
mvsnf, 9-8

N

nedit, 9-9
Network Entity parameter, 8-5
network licensing activities, monitoring, 9-15–9-16, B-11–B-12
NEW FILE option, 3-22
node name, 2-17
AP, 7-2
changing license server, B-13
nodes, configuring, 2-13–2-14
noise gate, 4-15
noise reduction, 4-14
Nortel Object Request Broker variables, 8-7–8-8
notification phase, 2-23
NTORB. *See* Nortel Object Request Broker
number of calls received, 1-5
numbers
choosing for channels, 3-9–3-10
choosing for prompts, 2-3–2-7, 4-4–4-6

choosing for trunks, 3-9–3-10
ranges of prompt, 4-4
numBoards variable, 8-11
numLogicalUnits variable, 8-11

O

Object Identifier, 8-3, 8-7
offsets, 4-4
OID, 8-7
online help, 1-8
OPEN IVR
Control Panel. *See* Control Panel
monitoring, 7-1–7-20
resetting, 1-19–1-20, 2-38
severity file, 7-14–7-20
starting, 1-19–1-20
stopping, 1-19–1-20, 9-6
organizing statistics, 6-5–6-14

P

pasting a range of prompts, 5-13
peak reading meter, 4-14
phases in call sequence, 2-23
phone. *See* telephone
Ping Value, 8-12
Play button, 5-10
playing prompts, 4-2, 4-22–4-25
PLF channel
selecting, 4-20
plf command, 4-17
PLF. *See* Prompt Loading Facility
plf_start command, 4-17
Port ID field, 7-7
Port Status window, 7-6
closing, 7-8
displaying, 7-6–7-8
updating, 7-8
Port type field, 7-7
Port Usage display, 7-5
practice recordings, 4-13–4-15
primary APs, 2-15
printing the System Application Monitor log, 7-13
problems, troubleshooting license, 9-14–9-15, B-8–B-9
programming MRS, 2-16
Prompt Import Utility, 3-5
Prompt Loading Facility, 1-7, 4-1
accessing, 4-17–4-18
exiting from, 4-61
notifying about trunks, 4-20
screen, 4-16–4-20
Prompt Management tools, 1-7
Prompt Update on Next Cell feature and channel acquisition type, 3-3
prompts, 2-3
AP
backing up prompts, 4-56
backing up, 4-3, 4-56, 5-17
changing, 5-12–5-13
choosing numbers for, 2-3–2-7, 4-4–4-6
converting to VSNs, 9-4, 9-5
copying
range, 5-13
waveforms from one to another, 5-15
cutting a range, 5-13
deleting, 4-3, 4-53–4-54
installing, 4-49–4-53
loading new, 4-2
managing, 4-1–4-61
maximum number
local, 2-11
system, 2-11
moving ranges, 9-8
numbers, 2-3
pasting a range, 5-13
playing, 4-22–4-25
recording, 4-2
recording
individual, 4-9, 4-9
methods for, 4-6–4-10
onto audio tape, 4-8
reel-to-reel, 4-14
temporary, 4-25–4-30

with a microphone, 4-7
with a telephone, 4-7
restoring, 4-3, 4-58
reviewing, 4-2, 4-49–4-53
standard system, A-1–A-16
ptype tool, 9-13
pull-down menus, 1-9
System Monitor, 7-2
System Prompt Manager, 5-4–5-5

R

radio buttons, 1-12
ralrm, 9-9
range in a waveform, editing, 5-12
range of prompts
copying, 5-13
cutting, 5-13
pasting, 5-13
prompt numbers, 4-4
reboot.sai script, 1-19
adding, 3-27–3-28
rebooting the AP, 1-19
Record a list of prompts screen, 4-30–4-31
Record Prompts with DTMF Separators screen, 4-40
recording
individual prompts, 4-9
lists of prompts, 4-9, 4-30–4-49
methods, 4-6–4-10
practising, 4-13–4-15
prompts, 4-2
prompts from a microphone, 4-7
prompts from a telephone, 4-7
prompts onto audio tape, 4-8
prompts with DTMF tones, 4-10
prompts with DTMF tones directly on the MRS, 4-41–4-44
prompts with DTMF tones onto audio tape, 4-44–4-49
temporary prompts, 4-25–4-30
reducing
noise, 4-15
sibilance, 4-15
reel-to-reel recording, 4-14
copying to cassette, 4-14
refreshing Port Status window, 7-8
rejection phase, 2-23
removing. *See* deleting
reorder tone, 7
Report tools, 1-5–1-6
reports
generating, 6-6–6-12
Reports menu, 6-6
reserved audio paths, 2-18
Reset
minor alarms, 9-9
Statistics option, 6-12, 9-9
Symposium OPEN IVR option, 1-19–1-20, 2-38
system, 9-7
resize Statistics option, 6-13–6-14, 9-40
resource
manager variables, 8-12, 8-13
Count variable, 8-14
Table variable, 8-14
Type variable, 8-14
response times, impact of Application Editor on, 3-2
restarting AP software, 9-7
Restore a list of prompts screen, 4-59
Restore all files option, 9-33
Restore only default files option, 9-33
Restore selected files option, 9-33
restoring
Control Panel, 1-18
files, 9-12, 9-32–9-33
prompts, 4-3, 4-58
Retry Value parameter, 8-5
reviewing
prompts, 4-2
temporary prompts, 4-49–4-53
ring trip trunk type, 2-21, 2-22, 2-34
root menu, 1-18
rsp variable, 8-9

rspResetSeverity variable, 8-10
rspResetSeverityTime variable, 8-10
rspStartTime variable, 8-10
rspStatus variable, 8-10
rspTotalSeverityRereadFailures variable, 8-10
rspTotalSeverityRereads variable, 8-10
rspVersionNumber variable, 8-10
rstat, 9-9
rstat command, 6-12
running
  applications, 3-16–3-17
  Call Audit Report, 6-8–6-9
  Call Detail Report, 6-7
  reports, 6-6–6-12
  scripts, 3-26
  Subscriber Report, 6-10
  Transaction Log Report, 6-11–6-12
  Trunk Usage Report, 6-10–6-11
runtime instance, licensing by, B-2

S

sai command, 3-8
sai_start command, 3-8
sam command, 7-10
SAM. *See* System Application Monitor
Sample Rate field, 5-9
sase tool, 9-34
sched tool, 9-19–9-25
Schedule a Daily Backup option, 9-31
Scheduled Event Scan Rate in seconds field, 2-11
scheduled events, listing, 9-22–9-23
scheduling
  events, 9-9, 9-19–9-21
scm_start command, 2-9
sconfig, 9-10
screen
  locking, 1-15–1-16
  unlocking, 1-16
scripts, 3-20–3-26
  adding, 3-21–3-23
  changing, 3-24–3-26
  reboot, 3-27
  running, 3-25, 3-26
secondary APs, 2-15
security, 3-33
selecting a PLF channel, 4-20
selecting. *See* choosing
server tools, license manager, 9-14–9-16, B-7–B-13
Service Flag parameter, 8-5
severity classes
  changing, 7-15–7-17
  OPEN IVR, 7-14–7-20
shared acquisition type channels, 3-4
Shared Development Environment (SDE), B-5
shell
  accessing System Configuration from, 2-9
  accessing the Prompt Loading Facility from, 4-17
showing. *See* displaying
shutting down. *See* stopping
shvsn, 9-10
sibilance controller, 4-15
simple network management protocol. *See* SNMP
single point in a waveform, changing, 5-12
Skip/Replace Existing Prompts field, 4-31, 4-40
slider, 1-12
SmartHelp, 1-8
SNMP
  configuring, 8-2–8-6
  installing, 8-1
  using, 8-1–8-14
SNMP events
  designating, 8-2
  using, 8-1
SNMP traps, 6-5
  requirements for, 8-4
software development
  Dedicated Development Environment (DDE), B-5
  Shared Development Environment (SDE), B-5
sound equipment, 4-13–4-15
  installing, 4-15

sources of report data, 6-6
SQL Link option licensing, B-6
SQL Support? field, 2-11
standard system prompts, 2-5, 4-5, A-1–A-16
Start Control Panel option, 1-18
Start of Recording Key field, 4-31, 4-40
starting
  AP software, 9-1
  applications, 3-16–3-17, 3-20–3-26
  OPEN IVR, 1-19–1-20
stat.d directory, 6-5
State field, 7-7
statistics
  backing up, 6-14, 9-11
  exporting, 6-13
  gathering from applications, 6-1–6-5
  organizing into reports, 6-5–6-14
  resetting, 6-12, 9-9
  resizing, 6-13–6-14, 9-40
  sources of, 6-6
statsbkup, 6-14, 9-11
status lights, 7-3
Status section, 5-10, 7-7
stereo cable, 4-13
Stop button, 5-10
STOP FORCEFULLY option, 3-4, 3-28
STOP GRACEFULLY option, 3-5, 3-28
stopping
  AP software, 9-1
  applications, 3-5, 3-28–3-30
  license daemons, B-9
  OPEN IVR, 1-19–1-20, 9-6
STRING column, 7-16
Subscriber Report, 6-10
  display, 9-9
Suppress Scheduler Resource Allocation Errors field, 2-11
switches, batch mode, 5-17
Symposium OPEN IVR Control Panel, 1-3
system activity, 1-5
System Administrator Script Executor, 9-34
System Application Monitor, 7-1, 7-8–7-13
  accessing, 7-10–7-13
  exiting, 7-13
System Application Monitor log, printing, 7-13
System Configuration option, 2-8
System Configuration, accessing, 2-8–2-9
System Console, 1-2
System Monitor, 7-1
  accessing, 7-1–7-2
  pull-down menus, 7-2
System Prompt Editor, 1-7
System Prompt Manager, 5-1–5-22
  accessing, 5-3
  pull-down menus, 5-4–5-5
system shell
  accessing System Configuration from, 2-9
  accessing the Prompt Loading Facility , 4-17
system tools, 9-13
system-wide prompts, 2-3, 2-5, 4-4
  deleting, 4-53
  maximum number of, 2-11

T

tape
  recording prompts onto, 4-8, 4-9
  recording prompts with DTMF tones onto, 4-44–4-49
  recording temporary prompts from, 4-28–4-30, 4-35–4-39
tape deck, 4-13
telephone line frequency response, compensating for, 4-15
telephone, recording prompts, 4-7
temporary prompts
  installing, 4-49–4-53
  recording, 4-25–4-30
  recording directly onto the MRS, 4-27–4-28, 4-32–4-35
  recording from audio tape, 4-28–4-30, 4-35–4-39
  recording with DTMF tones, 4-39–4-49
  reviewing, 4-49–4-53
testing
  applications, 3-1–3-5
  phases of application, 3-2

text editor, 9-9
text entry boxes, 1-13
text file
  display, 9-9
three-button mouse, 1-10–1-11
Timeout Value parameter, 8-5
tools, 9-1–9-40
  admingen, 9-2
  Application Management, 3-7
  application management, 3-7
  audit, 9-2
  backup, 9-2
  channel display, 9-3
  circ, 9-3
  cnvrtl, 9-4
  devnt, 9-5
  dmsgd, 9-6
  dtrkf, 9-6
  /etc/gen, 9-6
  export
  genshut, 9-7
  greset, 9-7
  killal.sh, 9-8
  license manager, 9-14–9-16, B-7
  mvpmt, 9-8
  mvsnf, 9-8
  nedit, 9-9
  ralrm, 9-9
  rstat, 9-9
  sched, 9-9
  sconfig, 9-10
  shvsn, 9-10
  statsbkup, 9-11
  version, 9-11
  vip_audit, 9-11
  vsn, 9-12
  xbup, 9-12
transaction log, 1-5
  clearing, 9-9
Transaction Log Report, 6-11–6-12
  display, 9-9
troubleshooting license problems, 9-14–9-15, B-8–B-9
Trunk Configuration screen, 2-34–2-35
Trunk Initialization Types, 2-22, 2-35
  in the call sequence, 2-24–2-34
Trunk Number field, 3-9, 4-19
Trunk Type field, 2-34
Trunk Usage Report, 6-10–6-11
  display, 9-9
trunk_init.d file, 9-6
trunks
  choosing, 4-11–4-13
  choosing numbers for, 3-9–3-10
  configuring, 2-21–2-37
  states, 7-5
tspResetSeverity variable, 8-13
tspResetSeverityTime variable, 8-13
tspStartTime variable, 8-13
tspStatus variable, 8-13
tspSystemType variable, 8-13
tspTotalCalls variable, 8-13
tspTotalCallsAnswered variable, 8-13
tspTotalNumPorts variable, 8-13
tspTotalSeverityRereadFailures variable, 8-13
tspTotalSeverityRereads variable, 8-13
tspTotalVsnVolumes variable, 8-13
tspVersion variable, 8-13
TTS option licensing, B-7
two-button mouse, 1-11
two-track tape, recording to, 4-14
types
  connection, 2-17
  MRS, 2-17

U

UDLV cell, 9-19
UEH. *See* User Error Handler
unloading applications, 3-31
unlocking the screen, 1-16
Unschedule a Daily Backup option, 9-31
unscheduling events, 9-21–9-22
updating Port Status window, 7-8
User Error Handler, 7-14

using
keyboard, 1-13–1-14
mouse, 1-10–1-11
SNMP, 8-1–8-14

V

variables
AP software, 8-9–8-12
core process, 8-10, 8-13
host communication, 8-11
MRS software, 8-12–8-14
resource manager, 8-12, 8-13
vendor variable, 8-11
version, 9-11
viewing. *See* displaying
vip_audit, 9-11
vlm_options tool, B-13
Voice Files Directory field, 4-56, 4-59
voice messaging databases. *See* message databases
voice prompts. *See* prompts
voice segment files, backing up, 3-5
voice waveforms. *See* waveforms
vsn data file
vsns allocated to screen, 9-8, 9-10, 9-12
creating, 9-35
updating, 9-12
VSN Identifier, 5-8
VSNs
converting to handle numbers, 9-5
converting to prompts and messages, 9-4, 9-5
locating, 5-2
storing, 2-3
vsnx.data files, 2-1, 2-5
vtorb, 8-7
ProcessorType, 8-8
RspCoreProcessMgmt, 8-8
RspInstallArea, 8-8
RspLang, 8-9
RspPassword, 8-8
RspTempInstallArea, 8-8
RspUserName, 8-8
SystemSpaceFreeBytes, 8-9
SystemSpaceMountPoint, 8-9
SystemSpaceTable, 8-9
TspCoreProcessMgmt, 8-8
TspInstallArea, 8-8
TspLang, 8-9
TspPassword, 8-8
TspTempInstallArea, 8-8
TspUserName, 8-8
VU meter, 4-14

W

waveforms
copying from one prompt to another, 5-15
editing, 5-11–5-13, 5-18
Web
description, 2-35
VRU type, 2-17
World Wide Web integration software licensing, B-7
Write A Script option, 3-20
write-save functions, B-4

X

xbup, 9-12, 9-25–9-33

Y

y-axis scale, 5-10

Z

Zooming slider, 5-9

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